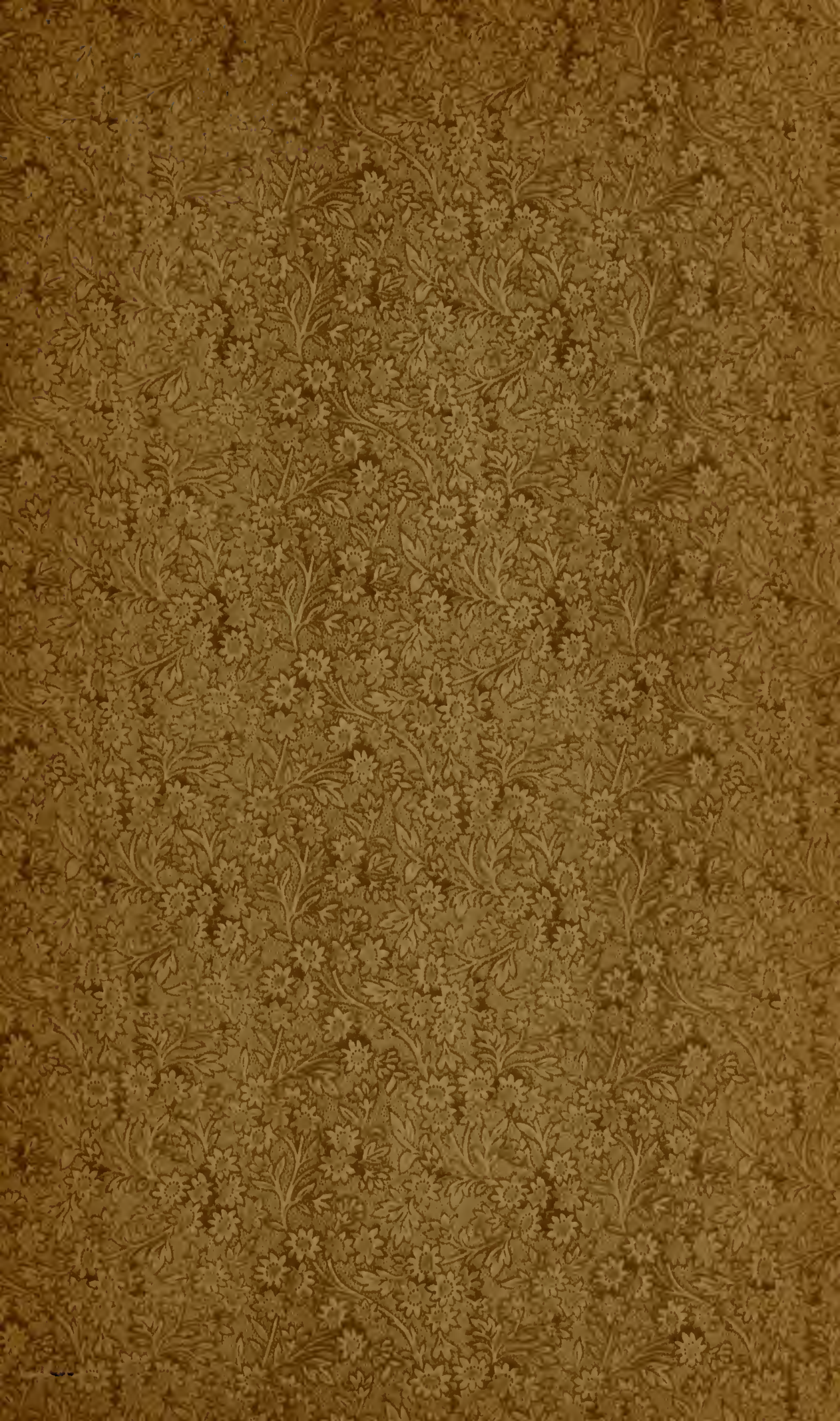


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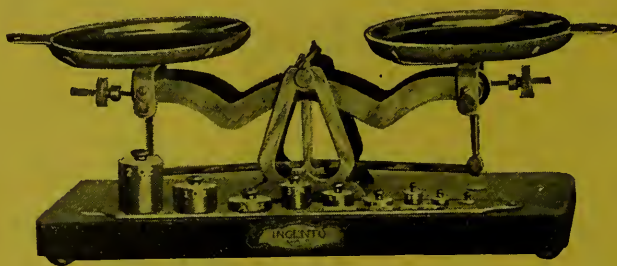
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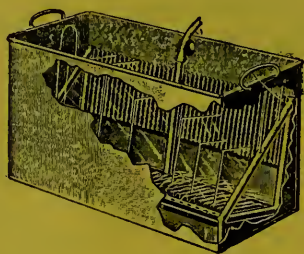
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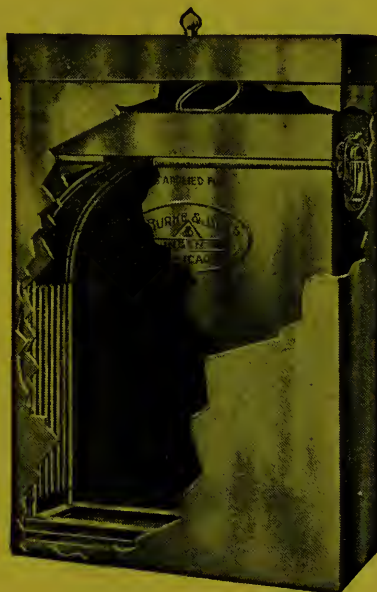
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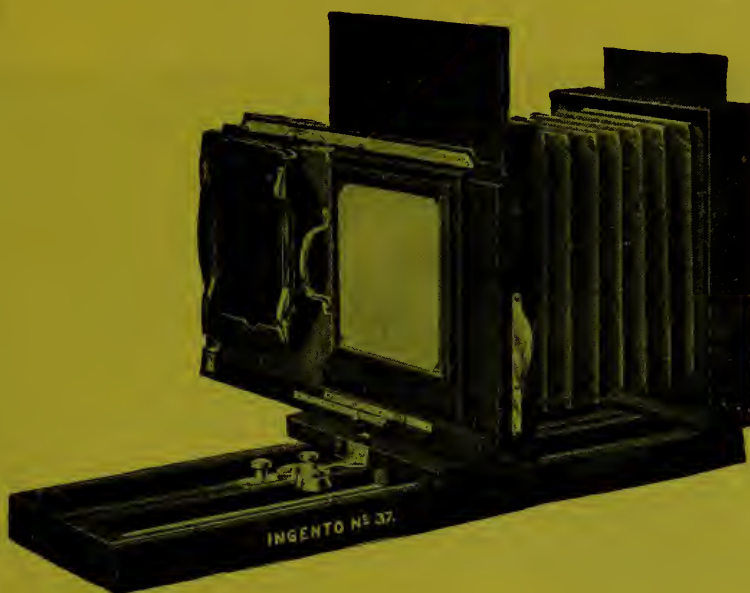
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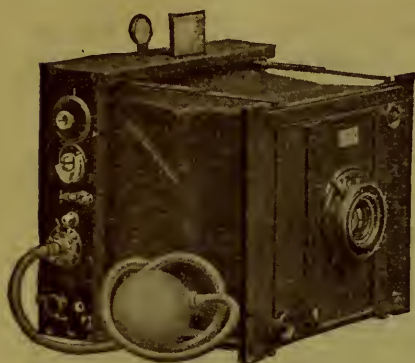
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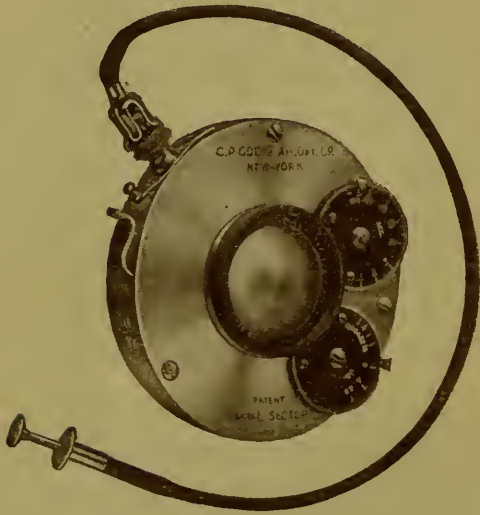
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VOLUME XXIII

Edited by John A. Tennant




NEW YORK
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PREFACE.

ERHAPS the wish is father to the thought, but my pleasure in this—the twenty-third issue of THE AMERICAN ANNUAL OF PHOTOGRAPHY—lies in the thought that the volume is better than last year's performance; more varied and helpful in its information; more interesting in its illustrations.

For this advance my hearty appreciation and goodwill go out to those who have made it possible by their generous co-operation. Many articles and pictures had to be left out, so widespread was the response to my desire to make this a record volume. To those who sent their work so willingly and are not represented herein my especial thanks are due and proffered.

The Formulary at the end of the book was prepared and given place in answer to many requests for this sort of information. A subject index is another new feature which, it is hoped, will add to the usefulness of the ANNUAL.

JOHN A. TENNANT.

NEW YORK, October, 1908.

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1908

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S
Jan.	1	2	3	4	May	1	2	Sept.	1	2	3	4	5
	5	6	7	8	9	10	11		3	4	5	6	7	8	9		6	7	8	9	10	11	12
	12	13	14	15	16	17	18		10	11	12	13	14	15	16		13	14	15	16	17	18	19
	19	20	21	22	23	24	2		17	18	19	20	21	22	23		20	21	22	23	24	25	26
	26	27	28	29	30	31	..		24	25	26	27	28	29	30		27	28	29	30	..	..	..
Feb.	..	..	..	..	..	..	1	June	..	1	2	3	4	5	6	Oct.	..	..	..	..	1	2	3
	2	3	4	5	6	7	8		7	8	9	10	11	12	13		4	5	6	7	8	9	10
	9	10	11	12	13	14	15		14	15	16	17	18	19	20		11	12	13	14	15	16	17
	16	17	18	19	20	21	22		21	22	23	24	25	26	27		18	19	20	21	22	23	24
	23	24	25	26	27	28	29		28	29	30	..	..	..	..		25	26	27	28	29	30	31
Mar.	1	2	3	4	5	6	7	July	..	..	..	1	2	3	..	Nov.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14		5	6	7	8	9	10	11		8	9	10	11	12	13	14
	15	16	17	18	19	20	21		12	13	14	15	16	17	18		15	16	17	18	19	20	21
	22	23	24	25	26	27	28		19	20	21	22	23	24	25		22	23	24	25	26	27	28
	29	30	31	..	..	..	..		26	27	28	29	30	31	..		29	30	..	..	..	..	..
April	..	..	..	1	2	3	4	Aug.	..	..	..	..	..	1	..	Dec.	..	..	1	2	3	4	5
	5	6	7	8	9	10	11		2	3	4	5	6	7	8		6	7	8	9	10	11	12
	12	13	14	15	16	17	18		9	10	11	12	13	14	15		13	14	15	16	17	18	19
	19	20	21	22	23	24	25		16	17	18	19	20	21	22		20	21	22	23	24	25	26
	26	27	28	29	30	..	..		23	24	25	26	27	28	29		27	28	29	30	31	..	..
	..	..	..	..	..	..	..		30	31	..	..	..	..	..		..	..	..	..	..	..	..

1909

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S	
Jan.	..	..	..	..	..	1	2	May	..	..	..	..	..	..	1	Sept.	..	..	..	1	2	3	4
	3	4	5	6	7	8	9		2	3	4	5	6	7	8		5	6	7	8	9	10	11	
	10	11	12	13	14	15	16		9	10	11	12	13	14	15		12	13	14	15	16	17	18	
	17	18	19	20	21	22	23		16	17	18	19	20	21	22		19	20	21	22	23	24	25	
	24	25	26	27	28	29	30		23	24	25	26	27	28	29		26	27	28	29	30	..	..
Feb.	..	1	2	3	4	5	6	June	..	..	1	2	3	4	5	Oct.	3	4	5	6	7	8	9
7	8	9	10	11	12	13	6		7	8	9	10	11	12	10		11	12	13	14	15	16		
14	15	16	17	18	19	20	13		14	15	16	17	18	19	17		18	19	20	21	22	23		
21	22	23	24	25	26	27	20		21	22	23	24	25	26	24		25	26	27	28	29	30		
28	..	..	..	..	..	..	27		28	29	30	..	..	..	31		..	..	..	..	..	..	..
Mar.	..	1	2	3	4	5	6	July	..	..	..	1	2	3	Nov.	..	1	2	3	4	5	6	
	7	8	9	10	11	12	13		4	5	6	7	8	9		10	14	15	16	17	18	19	20	
	14	15	16	17	18	19	20		11	12	13	14	15	16		17	21	22	23	24	25	26	27	
	21	22	23	24	25	26	27		18	19	20	21	22	23		24	28	29	30	..	..	..	..
	28	29	30	31	..	..	..		25	26	27	28	29	30		31	..	..	1	2	3	4	
April	1	2	3	Aug.	1	2	3	4	5	6	7	Dec.	..	5	6	7	8	9	10	11
	4	5	6	7	8	9	10		8	9	10	11	12	13	14		12	13	14	15	16	17	18	
	11	12	13	14	15	16	17		15	16	17	18	19	20	21		19	20	21	22	23	24	25	
	18	19	20	21	22	23	24		22	23	24	25	26	27	28		26	27	28	29	30	31	..	
	25	26	27	28	29	30	..		29	30	31	..	..	..	..		..	..	..	..	..	..	..

1910

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S
Jan.	..	..	..	..	..	..	1	May	1	2	3	4	5	6	7	Sept.	..	..	..	..	1	2	3
	2	3	4	5	6	7	8		8	9	10	11	12	13	14		4	5	6	7	8	9	10
	9	10	11	12	13	14	15		15	16	17	18	19	20	21		11	12	13	14	15	16	17
	16	17	18	19	20	21	22		22	23	24	25	26	27	28		18	19	20	21	22	23	24
	23	24	25	26	27	28	29		29	30	31	..	..	..	..		25	26	27	28	29	30	..
Feb.	30	31	..	..	..	..	..	June	..	..	..	1	2	3	4	Oct.	..	..	..	..	..	..	1
	..	..	1	2	3	4	5		5	6	7	8	9	10	11		2	3	4	5	6	7	8
	6	7	8	9	10	11	12		12	13	14	15	16	17	18		9	10	11	12	13	14	15
	13	14	15	16	17	18	19		19	20	21	22	23	24	25		16	17	18	19	20	21	22
	20	21	22	23	24	25	26		26	27	28	29	30	..	..		23	24	25	26	27	28	29
Mar.	27	28	..	..	..	..	..	July	3	4	5	6	7	8	9	Nov.	30	31	..	..	..	..	..
	..	..	1	2	3	4	5		10	11	12	13	14	15	16		6	7	8	9	10	11	12
	6	7	8	9	10	11	12		17	18	19	20	21	22	23		13	14	15	16	17	18	19
	13	14	15	16	17	18	19		24	25	26	27	28	29	30		20	21	22	23	24	25	26
	20	21	22	23	24	25	26		31	..	..	..	..	..	..		27	28	29	30	..	..	..
April	27	28	29	30	31	..	1	Aug.	..	1	2	3	4	5	6	Dec.	..	..	..	..	1	2	3
	..	..	..	..	..	..	2		7	8	9	10	11	12	13		4	5	6	7	8	9	10
	3	4	5	6	7	8	9		14	15	16	17	18	19	20		11	12	13	14	15	16	17
	10	11	12	13	14	15	16		21	22	23	24	25	26	27		18	19	20	21	22	23	24
	17	18	19	20	21	22	23		28	29	30	31	..	..	..		25	26	27	28	29	30	31
	24	25	26	27	28	29	30		..	..	..	..	..	..	..		..	..	..	..	..	..	..



COSTUME ARRANGEMENT.

Carle Semon.

The American Annual of Photography · · 1909

CAMERA HUNTING FOR BIG GAME.

By A. RADCLYFFE DUGMORE.



NOW that hunting big game with the camera has become a recognized form of sport, we are brought face to face with the problem of apparatus suitable for the very varied conditions encountered by those who bag their game with the harmless weapon.

Too much attention cannot be given to the subject of equipment, for on this must depend the success or failure of a trip that usually involves a considerable outlay of money and labor. Some men, extravagant in most other ways, will economize on the photographic outfit when the extra expenditure of a few dollars might prove of inestimable value. The chief requirements of a camera are: Strength enough to withstand the inevitable knocking about incidental to camp life; waterproof covering so that the camera itself shall not soak water; sufficient length of bellows to allow of the use of a long focus lens; front board large enough to admit of using a large lens (most cameras have absurdly small front boards); absolute smoothness of working parts; easily adjusted reliable shutter; perfect light tightness, as the plate must frequently be in readiness for a long time so that the slightest leak would be fatal; strong, safe, plateholders that will hold the plate securely and at the same time allow of its being placed and removed without difficulty.

for wild animal photography, but I prefer to take my chances with a good convertible lens which is light and quickly adjusted by means of the interrupted screw thread mounting.

I have not yet had a chance to try the new Zeiss telephoto which work at F10, but I understand that it gives wonderful results. Unfortunately its immense size renders it unfit for ordinary cameras and, then also, it is only made to cover a plate $3\frac{1}{2} \times 4\frac{3}{4}$ inches. Incidentally its cost is likely to prove somewhat high for some of us.

From a practical standpoint the only cameras worth considering for photographing big game, are those of the reflex and twin lens types. Other simpler forms of cameras may give an occasional good picture but they are not suited to serious work.

Whether to use films or plates is a question which every one must settle for himself. Personally I prefer plates notwithstanding their bulk and weight. Not only are they more rapid, but they keep better and are less prone to ills than films. The spool films are more satisfactory than packs, as the surface is more likely to be flat; under variable climatic conditions the films in packs will not lie flat, so that if you are using a lens of very little depth of focus your picture would be sharp in some parts and blurred in others. Whatever you use don't neglect the precaution of developing a test plate once in a while in camp, as things will go wrong without your observing them until too late. It is bad enough to have one day's work spoilt, but far better than to discover at the end of the trip that, some little thing having gone wrong with the camera, all your pictures are worthless.

With plates the developing may be readily done. All you need is some developer tubes, a rubber tray and some hypo; put the tray under a blanket and develop the plates by guess. It will only take a few minutes and a little moral courage. Films should always be developed as soon as possible after exposure in damp climates.

For changing plates I use a square case made of pantasote with cords at each corner, these tied to stakes keep the contrivance tight. There are two sleeves of the same material (and large enough to admit the plateholders) with tapes so that they may be securely fastened around the arms. The work of loading and unloading the holders is done entirely by

feeling, as I have no peep holes. Care must of course be observed in keeping the exposed plates separate from the unexposed; a slight confusion might lead to heaps of trouble, so keep your wits about you while tending this detestable job.

By way of precaution it is well to carry a spare ground glass and mirror for the reflex camera; also some spare screws, etc., in case of accidents. A makeshift ground glass can be made by coating glass with boiled paste, made of cornstarch or flour.

Under no consideration take any part of your outfit into the woods that has not been *thoroughly tested*. The more familiar you are with the camera the better work you will do, especially when working very rapidly or under great excitement. Your camera should be part of you and operated almost automatically. Never forget to see that your shutter is set and the plate-holder slide drawn before you take a picture. If working from a blind prepare for all contingencies *before* the game appears. Make the necessary opening and clear away whatever brush might obstruct your view. A twig 3 feet away and between the lens and the animal is remarkably conspicuous on the plate. It is a good plan to always keep a plate in reserve for something wonderful that *may* occur if all your plates are exposed, but which never happens when you are prepared



COW MOOSE.

A. RADCLYFFE DUGMORE.

By courtesy of Doubleday, Page & Co., N. Y.

EARLY MORNING PHOTOGRAPHY.

By WILLIAM FINDLAY.



HERE is a charm in the hush of twilight, but a still greater charm ere morning breaks. Especially in this the case on the Eastern seaboard of Scotland in the summer months. During the latter part of May, the whole of June, and the beginning of July, night is, in the northern latitudes, one continual twilight. The sun sinking beneath the western horizon sheds its lustre on the clouds above for long afterwards, and scarce has this died out ere.

“The rosy tint of morning
Hath decked the eastern sky.”

A haze may o’erspread the sea, and, when the sun looms above the horizon, this is transformed into an iridescent screen, any shipping moving about in it being glorified into an animated picture of noble proportions and inconceivably gaudy colors. Fleecy clouds that may be floating above absorb the tints, and a painter who could transfer them to canvas in all their glowing color and transparency would be a greater than even Turner, who loved to paint such scenes as these.

A photographer can do but scant justice to these beautiful early morning pictures. He can portray the cloud formations, and may convey to the mind some idea of the atmospheric conditions, but the color scheme is left to the imagination. If one is gifted with that attribute however—deplorable in some cases, but a gift from the gods to those artistically inclined—photographs may supply the ground-work for brilliant visions that may be conjured up in the mind—visions that may even o’er leap the bounds of Nature itself.

The photographs here reproduced were taken one morning early in May. It was not such a morning as described in the previous paragraphs, for these conditions, though ideal, are not prevalent every day—if they were their glory would pall.



MIDSUMMER MORN.

WILLIAM FINDLAY.

On the previous evening there had been rain, but during the night it ceased, and ere morning waked the sky towards the east was unclouded. It did not look promising for securing photographs, with cloud effects as their principal feature.

“But many a brilliant morning
Gives place to clouded day.”

And there was every prospect of this taking place. The wind was from the west. Huge masses of dark clouds were banked up in this direction. There seemed the possibility, however, of these breaking up, and as a result the detached parts would come floating eastwards and give the desired effect when they came into contact with the sun. With this contingency uppermost in the mind the writer paid a visit about 5 A. M. to the seashore, and the atmospheric change hoped for did take place.

The operations of setting up the camera in a suitable position and focusing had scarcely been satisfactorily accomplished ere a trawler bound for the fishing grounds came within the range of vision. The sun at the moment was unclouded, but the play of light and shade on the water, and the sense of motion imparted by the smoke emitted from the funnel of the steamer was so enticing that an exposure was made. A dark cloud was directly overhead, and the effect of this is seen in the rather dull tone in which the water that has not caught a glint of the sun's rays is rendered. The wash of a vessel that had passed up the channel accounts for the rather scattered reflections of that orb in the immediate foreground. See No. 1.

Following in the wake of the trawler came a small passenger steamer, and by the time it had come into the most suitable position in the composition a detached cloud had partially obscured the sun. But a break in the clouds to the west more than compensated for this “lowering of the lights,” and its effect is seen upon the wavelets that have caught a glimpse of the sky. No. 2.

Shortly afterwards another passenger boat came down the channel, belching forth huge volumes of smoke, but the sun was entirely obscured during its progress towards the open sea, and as there was the prospect of a better picture once this cloud moved off the desire to expose a plate was held in check. And there was not long to wait. The steamer referred to had just turned south, when another trawler came along, and both were



*Illustrating the article
"Early Morning Photography."*

WILLIAM FINDLAY.

included in the composition. The eye and the lens do not see alike, for looking over the top of the camera just as the exposure was made a gap seemed to exist between the two steamers. The lens tells a different story, as will be seen on looking at the photograph, where there is an apparent "join." No. 3.

For the next picture a change of position was decided on. A small fishing boat was bowling along with all sail set towards the harbor mouth. The wind being contrary for her entrance in this majestic manner into port, it was necessary to get much nearer to her before sail was lowered and resort had to oars. When this was done and just as everything was almost ready to allow of the photograph being taken, the foresail was lowered and the anchor cast, for a tug was seen making for the harbor, and much manual labor would be saved and a speedier passage to market assured if the tug took the boat under its friendly wing. The conditions were ideal when the exposure was made. The sun was bathed in fleecy clouds, retarding its brilliancy somewhat, while the dark masses surrounding were broken up in a most charming way. Had this not been the last unexposed plate there would have been a great temptation to expose many more, for the "boatie" seemed to be posing for its picture and the changes that were in progress in cloudland would have made an appreciable difference in every one. No. 4.

All four pictures were taken within the space of half an hour, and although representing almost the same stretch of water, the change in cloud and water effect and the different craft included make each quite distinctive. They go to swell a large collection of negatives taken from almost the same spot and under somewhat similar conditions, and though there may be one or two bearing a resemblance to its neighbor, no two of them are exactly alike.

In landscape work it is scarcely possible to chronicle so many of a given spot without verging on a monotonous sameness, but the "ever-changing sea" offers infinite possibilities. It is restless, never the same. In landscape again the exposure necessary to allow the foreground to impress itself on the plate is much too long for the sky, with the result that it is overexposed, and in development clouds are apt to be lost, and those printed in may not represent the prevailing atmospheric conditions, thereby conveying an impression of false lighting.

Exposure meters tell us, and experience has proved it, that sea and sky require the least exposure of all combinations, the water reflecting the light and increasing its intensity. This being so, it is a simple matter to secure both on one plate; and no more fascinating branch of photography can be followed than chronicling—in an imperfect manner it is true—those fleeting masterpieces of Nature that spread themselves out on the arch of the dome of heaven and whose glories are reflected on the rippling sea.

It may be of interest to state that the exposures for the pictures here reproduced was 1/100th of a second, the stop used being f8, and the plates of a special rapid brand. In mid-summer, however, it is possible with the same exposure to get pictures at four o'clock in the morning on slow, ordinary plates and, curiously enough, those who follow this branch of photography prefer to use those which are non-orthochromatic, more contrast being secured by the old-fashioned and oft derided tools. "Midsummer Morn," though exposed somewhat later than the hour stated, may be taken as a sample. As a developer for seascapes, pyro-soda has been found eminently suitable, care being taken to use sulphite and soda that have not grown stale. If it has, yellow negatives result, but with fresh materials, clean, crisp negatives, showing a wealth of detail, are generally secured, and when enlargements come to be made, there is some pleasure in working from them compared with those yellow, light-retarding screens which would need, in the words of Sam Weller, a lens of "double-million hextra magnifying power" to bring forth a satisfactory print.



FISHING CRAFT.

CHARLES E. WANLESS.

COLOR-SENSITIVE PLATES IN PORTRAITURE.

By C. E. KENNETH MEES, D. Sc., F. C. S.



HERE are two problems apart from artistic considerations before a portrait photographer. The first is to get a portrait of his sitter which shall be like that sitter, the second is to get a portrait of the sitter which is pleasing to that sitter,—and the two are not necessarily compatible. Much has been said of the vanity of human beings when they face the camera, but all that has been said is not just to human beings. If one takes a portrait on an ordinary plate, full size, and prints it straight on to smooth paper, on comparing it with the sitter one will wonder why it is that the marks, wrinkles, specks, and blotches shown on the portrait are not visible on the sitter.

The fact is that the skin, in all but children, is covered with little unequal blotches where the skin pores have at some time or other failed in their work, and that round every wrinkle a net work of capillaries has made a very fine red line, and these little red blotches and red lines which are practically invisible to the eye are startlingly visible in blue light. If you want to see it well, go and look at yourself in the light of a mercury vapor lamp, and remember that this is how you appear to an ordinary plate. This exaggeration has produced the necessity for retouching.

Every amateur knows that his photographs of his cousins and aunts will never give satisfaction unless he sends them to the professional retoucher, and he knows that if that professional retoucher is not a very good one the portrait may give satisfaction to the cousins and aunts, but by no means to the relatives of the cousins and aunts. The retoucher may possibly have fulfilled our second condition and made them pleasing to the sitter, but a retoucher who does not know the sitter is only too likely to have failed in the first, and have made a photograph as unlike the sitter as can well be conceived, given an outline.

This retouching is like the retouching in half-tone block making; it is largely unnecessary, it is dangerous, and it should be abolished. It is the work of the negative maker to get rid of the necessity for it, and the way to do this is to use a plate and a screen which shall take the object as it is seen. If a panchromatic plate be used, for instance, sensitive to red, with a medium screen, those red blotches and wrinkles will fade into the background, freckles will come back to their proper position (nobody but a photographer would think of reproducing a freckled person as having no freckles, but no photographer dare print his plate as he gets it, covered with smallpox marks), and the dress and hair and eyes will come into right position. If you go further, if you use a deep yellow screen, then you will over-correct and the whole skin will appear smooth and almost woolly, producing an effect which may be occasionally useful with elderly relatives of great wealth, but which from an artistic point of view is altogether to be deprecated.

Given orthochromatic rendering, the work of the retoucher should be confined to correcting faults in lighting, and if you make faults in lighting, well, that is your business and not mine. If you cease retouching your negatives you will soon find out how to stop faults in lighting. I firmly believe that nine-tenths of the bad lighting seen at present is due to the fact that the operator is trusting to the retoucher to correct every fault he makes, and is sinning through ignorance.

This article must not be taken as meaning that great portraiture does not exist. It does, but where great portraiture exists it is because the photographer is an artist and frequently does his retouching himself, or has an artist for retoucher, and so has triumphed over the defects which can be so easily removed from his path. And now I can see that question coming at me at once, "What about exposure?" Well, you can get fast panchromatic plates, you can get plates requiring only the same exposure as the fastest ordinary plates, considerably faster plates than are used by the majority of portrait photographers; a medium screen in a studio would be about a x3 screen, and the exposures are not more than twice as long as the majority of exposures given.



HUMPHREY: IMPRESSION
OF A CHILD.

EDITH L. WILLIS.

STEREOSCOPIC PHOTOGRAPHY.

By HENRY C. DELERY.



AMONG the many recreations fostered by our delightful art of photography, there is one which should stand pre-eminently beside all others, but unfortunately has been almost entirely forgotten, by this we refer to stereoscopic photography. Yet stereoscopy affords pleasures found in no other methods of representing pictures, for here we have objects shown to us in all their natural appearance with a solidity of modeling and perspective which cannot be obtained unless we view the object itself.

Perhaps this apparent neglect is due to the paucity of notice given to the subject, but the camerist may be assured that this branch of photography is most attractive and fascinating and of which one soon becomes an enthusiast.

It is not the intention here to enter into a lengthy discussion on the merits and principles of stereoscopic photography, but rather to give a few hints gathered from the fruit of personal experience.

We will first consider the selection of a camera; there are several good makes on the market which may be classed into two kinds: the stereoscopic camera proper, which operates with two separate bellows or compartments, each independent of the other, and the combination camera in which there is only one bellows with a removable rolling partition on the inside and which can be used with a single lens if so desired, giving the advantage of two cameras in one. I have used both styles and must confess that I prefer the combination kind. But by all means the camera should have a good pair of well matched lenses, giving equal density in the twin negatives, an automatic shutter with pneumatic release and the usual rising and falling front as provided with the ordinary cameras. It is also important to have a spirit level to gauge the position of the horizon line so necessary to have perfectly straight in the



APPLE BLOSSOMS.

W. E. BERTLING.

stereoscopic picture; and finally select a camera in which the view can be observed on the ground glass. With both styles of cameras, it is possible to take two small views on the same plate or film, by merely capping one of the lenses and making the exposure; this gives a picture of the size popular with the small hand cameras. I would strongly advise the intending purchaser to have the manufacturers thoroughly test the camera before buying so as to correct any defects which may exist, as a stereoscopic camera requires more careful adjustment than the single lens instrument, and by this means much valuable time and worry may be saved.

In selecting a view for stereoscopic pictures, special attention must be given to the foreground, for here lies the secret of a successful picture. The theory of stereoscopic work is based on the fact that our two eyes do not see an object from the same point of view and though to our mind the object appears the same, yet there is a perceptible difference. This is readily apparent if we place ourselves in close proximity to a post or column and looking forward with the two eyes opened and closed alternatively; we notice that what ever object is in the background has a portion back of the post which is seen by one eye and not by the other as each eye is opened and closed, making us see as it were behind the object before us, and this diminishes in proportion as the angle of the distance of the objects before us becomes smaller until it ceases entirely. It will then be readily observed that the best pictures are those which have a foreground with objects well scattered about but not necessarily too prominent. If the foreground is well studied, the distance will take care of itself as far as visual effects are concerned.

The exposure should be generous, erring on the side of over-exposure rather than too little; undertimed negatives have no business in the stereoscope. In developing, we should strive to obtain a soft mellow negative with very little contrast, which will yield a print free from chalkiness, and this point we must bear in mind that the high lights should always be tempered down or else a bright summer landscape will be given the appearance of being covered with a drear winter's snow. The density of the negative should be made to suit the quality of the paper and process intended in the reproduction. The

modern tank development method is productive of very good results, provided that a reversible tank is used. As to the developer, I prefer the old pyro as being the best and most reliable.

A word as to printing: Formerly it was customary to employ a glossy paper for this class of work, but now the development papers yield very good results, and withal saving precious time and labor. A glazed or semi-glossy surface answers best, but one must be careful to avoid that bugbear, "chalkiness."

Stereoscopic pictures must be transposed in mounting, that is the left hand picture must occupy the right side of the mount and vice versa; this of course being due to the negatives being reversed when the view is taken in the camera. This may be the cause of serious blunders and in order to prevent mistakes in mounting, I make it a rule to mark a rough circle in pencil on the back of the print before trimming so that one can always tell at a glance on which side of the mount the respective pictures are to be placed.

The mounting of stereoscopic pictures is not a difficult task but considerable care is required in trimming the prints. A convenient and accurate method is to have a form made 3 inches wide and $3\frac{1}{8}$ inches high with an arched top or the upper corners rounded. The first step is to cut the base line; an object or point similar in each picture is selected and the rule placed over same and the knife run through. This base serves as a guide to place the form, the bottom edge of the latter being set on the base of the print. Some authorities contend that for the print that is to be mounted on the right hand side, more subject should appear on the right hand than on the right of the left hand picture, and on the left hand picture, there should be more on the left side than there is on the left side of the right hand picture.

To paste the prints on the mount, first find the exact center of the card and set one picture so as to be straight with bottom edge of same, if the prints have been accurately trimmed, the second picture will fit snugly alongside of the first. When dry, the card is shaped in a burnisher, being careful not to curve it too much; the picture is then ready for the stereoscope.



ANIMAL PHOTOGRAPHY.

By MRS. HELENA C. SUTHERLAND.

With Illustrations by the Author.



ANYONE who is really interested in this branch of photography, knows how absorbing it can become; still, not much serious work is done in this line, the "snapshotters" are many, and we are overdone with photographs of household pets which are almost invariably photographed with the proud owners. How rarely such pictures give pleasing or even passing results. People say, "Animals are so difficult to manage"; this is in a measure true, but a great deal lies in knowing how to manage them.





Being much interested in cat and kitten studies I purpose saying a few words on the subject. Cats as a rule do not object to sitting, but kittens are harder to control, especially if you want a number in the same picture. Choose a calm day, light good, but not bright sun, erect a plain background (light gray is best) against a wall out-of-doors, cover a table with the same stuff that you select for your background and place it about two feet in front of the background (the back legs of table should be an inch higher than the front legs), your lighting should be more from behind than the side, see that your details are correct, have no creases in background, erect your camera and focus very correctly on the center of the



table. If you desire to take a number of kittens together it is an excellent plan to give them a liberal meal of meat, after which they will go to sleep; when your preparations are all made, and your light suppressed—sun if possible,—get someone to bring out the kittens, see that your focus is correct and before they get properly lively after their nap attract their attention. This should not be done by the photographer and may be managed in many ways. The person who is attracting their attention should be behind the camera, a newspaper held up and made to crackle often is most successful; don't hesitate to



let your shutter go if you think there is a fair chance of getting something, remember there are times when one should risk wasting plates. It is most difficult to get a successful result by giving longer than the $1/15$ of a second, but the accompanying illustrations have all been taken without a focal plane shutter. This I merely mention not because I do not appreciate that splendid invention but simply because I did not possess one when these photos were taken. A very short exposure will never give sufficient detail in the fur of the animal to make a successful picture.

With respect to photographing wild animals in captivity there is no doubt that they know those who like them and show no fear of them. The old saying, "One man can steal a horse while another may not look over the gate," applied here is very true, the accompanying photograph was taken sitting inside the lion's cage, and he seemed much pleased; the same



lion not long afterwards smashed a camera with a blow of his paw and gave the artist a severe fall for attempting to take his portrait by putting the lens through the bars from the outside of the cage. The lion cub was nine months old and after six minutes' conversation allowed me to pose him.

Anyone blessed with perseverance, patience, and a love of animals can succeed in this branch of photography.



A QUIET AFTERNOON.

BELLE JOHNSON.



LOOKING FOR DADDY.

MRS. JEANNE E. BENNETT.

HELPING THE DEFECTIVE NEGATIVE.

By JAMES THOMSON.

THE average beginner in photographic procedure is smitten as a rule with the negative having dense high lights, clear glass shadows, and transparencylike qualities in general. The advanced amateur however, would fain get away from all that, and realizing how poorly the ordinary plate records values as presented to the normal eyes of man, would fain reduce or eliminate high lights, build up shadows to the end that they will print lighter, and generally heighten the tone of the greens, yellows, and reds. This he attempts to do by manipulation, varied in character, and generally upon the glass side of the negative.

All such methods I have tried and am at present convinced that nothing compares to a staining of the film, using a wash of transparent water color more or less deep as the case may demand. It is virtually lantern slide tinting applied to the negative. Nor is it at all novel other than in the method of working whereby faults, formerly apparent in the case of negatives, have been entirely eliminated. In some quarters we are instructed to employ the water colors upon the dry film, applying the medium with a brush. Experiment, however, will quickly discover the fact that any such attempt will result in certain muddiness from an uneven deposit of body color, while quite often brush marks begin to develop upon the softening film. The water color artist applying a wash to paper first thoroughly wets the surface with clear water, afterwards absorbing the surplus with a white blotter. Then he applies his color and it will settle evenly.

In like manner to apply an even tint to the film of a negative necessitates our first soaking it in water for some ten minutes to soften the gelatine, afterwards setting it aside for a few minutes to drain. This done, color may be successfully applied so that there will result *an even transparent tint entirely free from grain.*

Any of the transparent colors sold for coloring lantern slides will serve, but the better plan will be to use gamboge, sepia, Vandyke brown, or vermillion water color bought of the dealer in artist materials. There are some colors more transparent than others and such should be chosen.

Presuming there is a landscape negative that prints too dark in the portions devoted to the greens, the certain remedy is to be found in a tinting of such defective parts with color more or less deep. Again, there is a portrait of a lady garmented in white, but in bringing out the detail of the dress, the face prints too dark. A wash of water color carefully applied to the face portion of the film is the remedy. Moreover, we may repeat the operation as many times as deemed necessary without detriment, and when inadvertently overdone, a soaking in water for an hour or two will discharge the color.

There will be required in addition to the water colors, a glass of water, a wad of absorbent cotton, and a couple of brushes, one for fine spotting, and another to apply broad



THE MAGAZINE.

HENRY HALL.

washes, say a number three Winsor and Newton camel's hair "water color." To apply the color the negative should be held at an incline against the light from the lower sash of the window, or over a sheet of white paper; dipping the brush in the water sometimes before beginning operations will be advisable to prevent the hairs from coming out as they are apt to do when a brush is new.

To treat a small section such as the face presents, the smaller brush should be used. First dip in the water, then take up a little of the color and rapidly running around the outlines as a preliminary, complete by flowing the color over the center. An immediate swabbing with a wet wad of absorbent cotton will prevent the color from settling in the film in an uneven manner, moreover removing all traces of body pigment, leaving a clear, clean transparent tint in the gelatine. The secret of successful working is in the "wiping off" or swabbing the superfluous color from the surface of the film through the agency of the wet cotton.

For a broad wash a small quantity of the paint should be separately mixed, a generous brushful applied to the involved portions at their uppermost bounds, and the whole surface flowed over as quickly as possible. The negative being held in the hand at an incline insures of a downward flow of the color, but immediately application is made the surface should be wiped over with the wad of wet cotton. Where there is a small part to be treated the wetting of the film may be dispensed with, the color being applied to the dry film, but always there must be the final washing off with clear water.

In the thinnest portions of some negatives is delicate detail which is quite lost in printing. On the glass side the positive picture shows up prominently but once printing is effected we have but an inadequate registration of it. Tint the film, however, in the manner described and the detail, backed up by the necessary opacity will show up as if the normal deposit of silver particles were there. There is no obscuring of the image other than is implied in a holding back of certain portions through the employment of the yellow or red stain which acts as a filter. It is a filter locally applied.

Not only may foregrounds be lightened, detail in foliage brought out where there is the record of absolute blackness, but



HELENE.

Copyright 1908, by Charles H. Davis.

needed atmosphere and the effect of distance supplied where such essential qualities are lacking. Also is this method useful in separating planes, using washes of varying tones of one color, or yellow may be used for the extreme distance, green for the middle distance, and carmine pink, purple, or blue for the less remote portions.

The worker who is familiar with water color painting and applying washes of color to paper may use the same methods here and be certain of success. The brush is simply employed to convey the color to the parts and the soft film must not upon any account be worked upon enough to leave scratches.



R. DÜHRKOOP.

SEPARATE SOLUTION DEVELOPMENT

By HENRY F. RAESS.

IN *The Photographic Times*, May, 1908, is an interesting article on a method of development suggested by Joannovich. We made some tests to see if there was anything new under the sun for developing snapshots, especially those which were under-exposed. Comparative tests made with the usual developer (metol-hydro) and the one of Joannovich's, resulted in favor of the latter method. The plates had a little more detail, were very clear and free from fog, and the time of development was much shortened. One of the plates after developing by the new method was put into the regular developer for some time to see if any more detail could be forced out, but without success, the plate gradually fogged.

The method which gave the best results was as follows. The plate was first placed in solution No. 1 (see below) for one minute, drained for a few seconds and then placed in solution No. 2 for the same length of time. After this the plate was rinsed and the treatment repeated, the plate was then fixed. This way of developing saves a great deal of time because we know all the possible detail is out in five minutes and we do not soak the plate by the hour trying to force something out and all we get is a fogged plate. Frilling also need not be feared. Intensified plates have a better appearance. As the plates require no watching, the whole process may be carried out in darkness. The formula used was:

SOLUTION NO. 1.

English.		Metric.
33 ozs.	Water	1000 c.c.
3½ ozs.	Sodium sulphite	100.0
75 grains	Hydrochinon	5.0
75 grains	Metol	5.0

SOLUTION NO. 2.

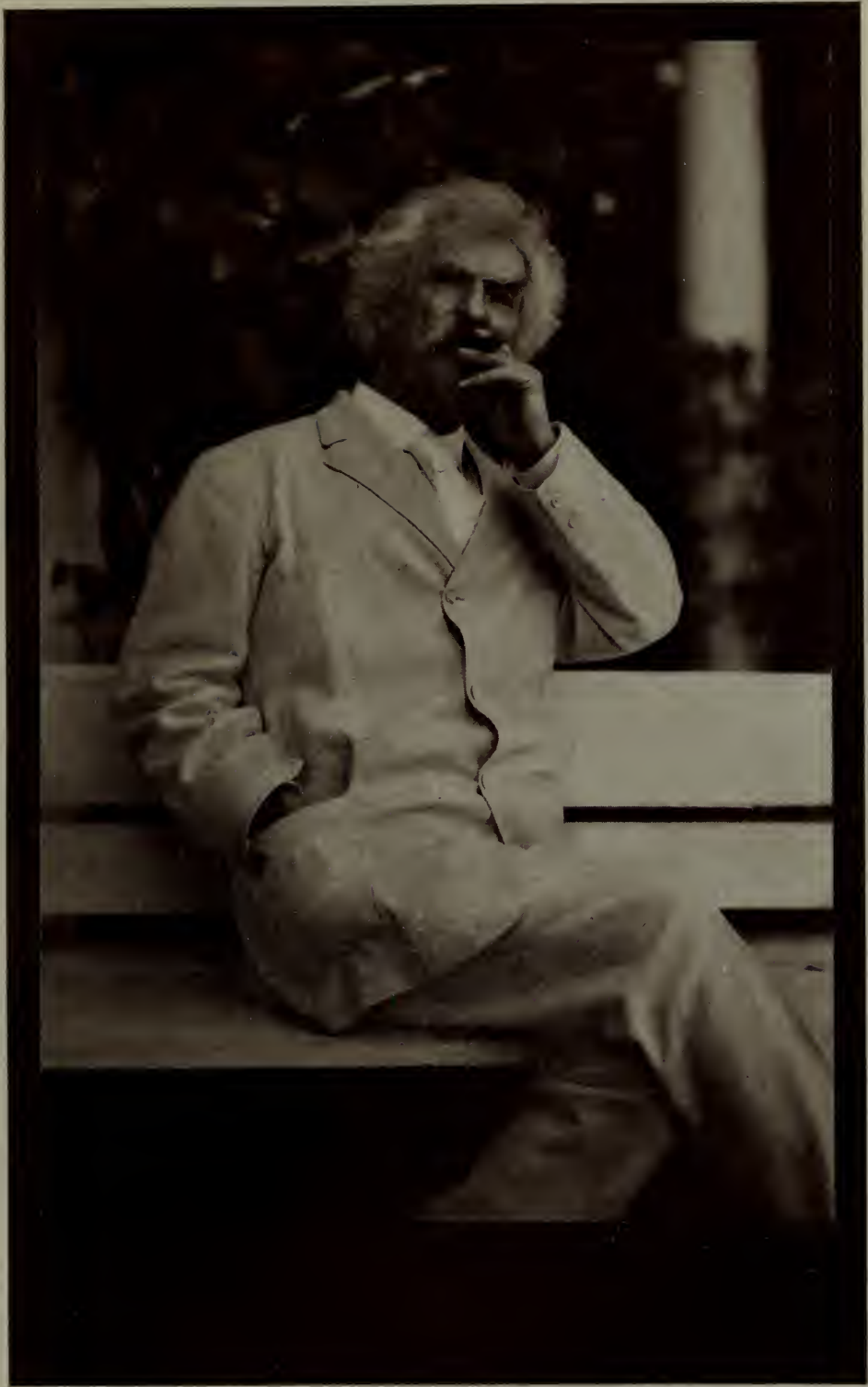
3½ ozs.	Potassium carbonate	100.0
33 ozs.	Water	1000 c.c.

Solution No. 1 can be used for some time, but solution No. 2 should be discarded after eight to ten plates have been passed through.



MAKING FRIENDS.

A. B. HARGETT.



"MARK TWAIN."

Mrs. E. P. Cabot.

PAINTING AND COLOR PHOTOGRAPHY

By CHARLES M. CARTER.



WHAT will the poor artist do now that it is possible to produce mechanically the colors of nature?" Such was the question proposed to me when the Autochrome plates first appeared. The questioner seemed to think that really the occupation of the artist was "gone." Unfortunately, however, the proposing of such a question made it apparent at once that the person proposing it had, to say the least, a very limited conception of the artist's relation to his surrounding. If he is to be regarded as a sort of human camera whose business it is to mechanically produce the spots of color placed in front of him well and good. Viewed in that light the occupation of the artist is certainly "gone." For he cannot well hope to rival what it is now possible to do with the Autochrome plates.

I regret that it should seem necessary to dispel this false conception. It would seem that any person intelligent enough to interest himself in the progress of science and art, should know enough about the art of the artist to know that in no sense does he attempt to represent his surroundings as they appear on the ground glass of a camera. Viewed in this light what miserable failures are all the masterpieces of art! Take the works of Turner, Corot, as examples, they are far from being photographic representations.

The fact is, the charm of a work of art is that it represents nature as seen "through the alembic of an individuality." The artist regards his surroundings, they give him certain impressions, these impressions he seeks to convey to others. That which he would convey, and the manner in which he conveys it are among the artistic features demanding our consideration. Now photography, pure and simple, gives facts. If in the hands of a competent person it may be made more or less a means of artistic expression. This particularly applies to monotone photography where there is pliability in all the opera-

tions. Color photography, however, as far as developed, can hardly claim to offer such freedom, its present state seems to be that of the first black and white photograph. If the various operations are fortunate the colors are reproduced with more or less exactness, but slight variations in manipulation produce variations from the subject reproduced. The author has in mind several attempts to reproduce a painting. While several were passable no two were alike, nor *exactly* like the painting.

It has been my privilege to see considerable work on the new plates in New York, Paris, etc. While technically many of the works seem quite successful, at the same time I find that they do not interest me now as much as at first, and why? At first the novelty of the reproduction was sufficient to interest, but as a painter it soon became evident to me that they lacked those features which count for artistic expression. They simply present colors in a matter of fact, chrome-like manner. If the subject is a portrait, still life, or something of that character, there is some chance for an artistic result as in these directions the operator has a chance for preliminary artistic arrangement. But the ordinary run of subjects exhibited, representing interiors and landscapes, are devoid of the artistic element, and often represent a jumble of colors.



ROSES.

ROBERT BURNIE.



"ALBERT LOOSE."

JANE REECE.




A WINTER MORNING.

W. E. BERTLING.

SOME PHASES OF COMMERCIAL PHOTOGRAPHY.

By H. S. HOOD.

 HERE are a great number of photographers who are, it is to be feared, not fully alive to the possibilities of commercial photography in its many phases. Commercial Photography, broadly speaking, covers all of the ground not covered by portrait and pictorial work. The field is so extremely large that one man cannot hope to master it all. There are, for instance, the making of Cinematograph films, X-ray pictures, Photomicrographs, Architectural, Engineering, and Mechanical record pictures, Interiors, Flashlights of all descriptions, and a host of others.

One of the most interesting sides of commercial work is the portrayal of the development of suburbs and summer resorts. As an instance, there is Stone Harbor, New Jersey, which is being improved and developed by the South Jersey Realty Co. In January, 1908, the place was a barren waste of sand dunes and marshy land of a very forbidding appearance. There were a few houses and an abandoned hotel, relics of a former attempt at development which had failed for lack of the "sinews of war." At this stage and before the company commenced operations, a series of photographs was taken showing the situation in its worst aspects. These were for future reference. A panoramic view was then taken of the beach which is, by the way, probably the finest on the eastern coast of the United States. Then, while the company was busily engaged in grading the streets, laying sewers, filling in the swampy places with sand, paving streets and sidewalks and improving the property generally, the photographer took a steady stream of pictures showing the progress of the work, dating the pictures in order to show the speed of the work. One of the greatest improvements that was made was the conversion of about twenty acres of marsh into good solid ground to be used for building purposes. Here photographs were

necessary to show people later, how great were some of the difficulties which had to be overcome. The filling in was done by a giant dredge which sucked the sand from the bottom of the channel behind Stone Harbor and conveyed it through an immense steel pipe to the spot where it was needed, where it was smoothly spread about, making the filled in portion as level as a ballroom floor and as solid as a rock. Photographs were taken of the marsh before it was touched; while the dredge was at work and after the work was completed. Thus a photographic record was kept of the work which had been done. For those who might doubt the ultimate success of the enterprise, a series of progressive views was made showing the rapid growth of several resorts which have already been improved along somewhat similar lines.

When the fishing and bathing seasons opened, another field of endeavor presented itself to the photographer. At this time the company decided to issue a periodical which was to set forth the advantages of Stone Harbor's fishing, bathing, and other attractions, and of course there were illustrations to make of well-known fishermen and their catches, groups of bathers, sailing parties, and notable visitors. Then there were views to make of the company's special trains bringing prospective buyers of lots; and views of some of the numerous cottages which were at this time in course of construction, some of which were nearly completed. These were incorporated in the company's latest prospectus, copies of which were sent to interested parties. It will be seen that there is a good field for enterprising commercial photographers at the newer resorts and one that is not cultivated as it deserves to be. The work presents no insurmountable difficulties and is interesting in the extreme.

The equipment required for the usual run of work of this kind is not at all extensive. It consists merely of a good lens, preferably an anastigmat with a focus of about twelve inches; an eight by ten view camera, and a shutter capable of making exposures of one one-hundredth of a second. The best plates for use at the seashore are non-halation orthochromatic plates. Next to these rank the single coated plates of medium speed such as the Lumière Blue Label or the Seed 26. It is however, poor policy to use any but the best materials for any

kind of photographic work. It is true there is an old saying that "A poor workman blames his tools." It is also true that a good workman can do better work with good tools than he can with bad or indifferent ones. Good negatives have been developed in pie plates, and the writer knows of cases where plates have been developed in pasteboard dry plate boxes with good results. Note this, however, the plates were of the finest quality and the developer was compounded with the purest chemicals. For some seashore work, single coated plates will do very well; but in the majority of cases the double coated plates will give the best results. It is a hard matter to get brilliant snappy negatives on a sandy beach on a bright, clear day. Unless orthochromatic plates are used and developed in the tank, the sand is very likely to appear as pure white paper on the finished print, while the sky is much too dark and totally lacking in atmosphere. Another reason for a good many of the failures, is the use of too fast a plate with its consequent over-exposure and flatness.

Another side of commercial photography that holds a great deal of interest for the serious worker is that which includes the taking of machinery. As a rule, the standard works on photography do not give much space to this important branch of the work, which is strange enough when we consider the many difficulties to be overcome and the many troubles that are very often encountered. Judging by about ninety per cent. of the picture of various kinds of machinery that the writer has seen, the subject does not seem to be so well understood as it might be. The average photographer does not seem to think that it is necessary to make any effort to properly light his subject. If a portrait photographer placed a sitter directly before a window with his or her back to it and made the exposure in that position, the result would be a photographic outrage and the sitter would have none of it; and yet this is what is done daily in the case of machinery. It is of course impossible to move the average machine, so if it happens to be placed in such a position that it is necessary for the operator to look against the light, said light consisting of several windows, the obvious thing to do is to cover the offending windows with burlap, wrapping paper, newspaper or anything else that happens to be handy and will serve to keep out the

light. If this is not done, and the picture is taken by daylight; no matter which kind of plates are used, halation will result.

In most cases, after the windows behind the machine are darkened, there will not be enough light entering from other sources to permit of any but a very long exposure and usually the light that does enter will be very uneven, rendering it practically impossible to obtain an evenly lighted soft negative showing the machine to the best advantage. Here then is a case where the use of artificial light of some sort is imperative. The best light is, of course, that given by the combustion of magnesium. Some manufacturers will not permit the use of flash powder of any kind in their plants. In these cases electric light can be substituted, if it is available. One fifty candle power incandescent lamp placed upon the end of a loose wire about twenty feet in length will often be sufficient for the purpose. The lamp can be moved around at will during the exposure, enabling the operator to spread the light very evenly. A machine not over fifteen feet long, lighted in this manner will require about ten minutes exposure with the lens stopped down to f22. The length of the exposure varies with the color of the machine. This should not occasion any trouble, as the majority of machines are painted dark colors.

The average manufacturer of machinery will, however, offer no objection to the photographer's using flash powder and if carefully used there will be no danger of a fire. The best powder to use is pure, somewhat coarse magnesium, and the best lamp to use it in is a small blow lamp having a capacity of one-half ounce. This quantity of powder is sufficient to illumine a machine thirty feet in depth. The lens can be stopped down to f32. The lamp should be kept moving during the exposure in order to prevent too deep shadows and disagreeable reflections. When a machine is perfectly new it is sometimes rather hard to completely obviate the reflections. Where troubles of this sort occur frequently it is a wise plan to arrange with the manufacturer to have the machines photographed before they are varnished. When the machine is constructed entirely of iron or steel it is usually painted dark green or black and it is a comparatively simple matter to avoid reflections. Any parts that appear too glossy can be rubbed with putty before making the exposure.



Mrs. Jeanne E. Bennett.

A machine that has been installed and running for some time will present far more difficulty than a new one owing to the fact that it will be in all probability, pretty well covered with oil. All appearance of greasiness can be removed by simply rubbing finely powdered charcoal or lampblack over the machine wherever needed. This can, naturally, only be done when the machine is painted black. When it is painted any other color the only thing to do is to have it thoroughly cleaned.



The accompanying illustration is a picture of a hoist that was taken by flashlight. It will be noticed that there is a total absence of reflections. In this case it was only possible to obtain this result by the use of multiple flashes. If the operator had remained behind the camera and merely moved the lamp from side to side the picture would have been a very poor one. Instead of doing so he made one exposure on the right side of the camera, permitting the light to strike the hoist at an angle of forty-five degrees and then repeated the per-

formance on the left side of the camera. The charge was somewhat heavier on the one side than on the other in order to give just enough shadows to make a snappy negative.

When the average person looks at a safe, the impression it conveys to him is of something very black and very shiny. Now if this same person owns a camera and has a smattering of photography and photographs the safe under ordinary conditions, the result will furnish him with considerable food for thought. The finished print will show not only the safe, but also the camera, the operator and all of the furniture that stood opposite the safe and behind the camera. At this point he will probably take another look at the safe and this time he will see a number of things in it that he probably never noticed before. The writer speaks feelingly concerning the above as he has been there. In order to get a perfect picture of a safe it is necessary to get a piece of black cloth considerably larger than the safe, cut a small hole in it for the lens to peep through and place it before the camera, thus screening off all objects that would otherwise be reflected. The light must come from both sides of the camera and should be a trifle stronger on the one side than on the other. If a flash lamp is used it must be well screened.

In photographing furniture the same troubles are often met with that bother us when we attempt to portray a safe; but to a lesser degree. One of the most difficult pieces of work that the writer ever attempted was making eight by ten pictures of six new Grandfather's clocks. The reflections came from all sides and it was only after we moved the clocks to every conceivable place in the room and screened two sides and the floor of the room, that we were able to get satisfactory pictures. In photographing furniture there is a great tendency to over-expose, even among experienced workers. The exposures should be as short as possible and the plates should be developed in a developer such as eiko-hydro which gives vigorous negatives, full of detail. The slightest over-exposure will cause the grain of the wood to look flat and this is the worst defect that a picture of this kind could possibly have. Mission furniture is the easiest to photograph. Veneered and enameled pieces present more difficulty. The secret of success in this line is, "Don't overexpose."



MRS. JEANNE E. BENNETT.

WINDOW LIGHTING.

By FLORA M. COLMAN.



HIS is by no means a novel subject, but I hope that the simplicity of these notes will help some beginners in this most interesting branch of photography.

There has been much written about window lighting and home portraiture, and most of the information given is good. Perhaps the writers insist too much upon accessories and makeshifts for studio conveniences. In my experience I have found that a good light—plenty of illumination—is the great essential, as short exposures give more natural expressions in one's subjects—which is what we seek in our portraiture.

The simpler the work can be made the better are our chances of success. In home portraiture our subjects are most likely to be friends or acquaintances and, in such cases, it is better to get through with the sitting with as little delay as possible.

A word as to backgrounds. Keep these as simple as possible. Wherever available the natural surroundings of the home window may be skilfully used to give the proper environment to the figure. Obtrusive lines or designs in draperies, hangings, wallpapers, etc., must, of course, be looked after. For a plain dark ground, where other surroundings have to be put aside, get a yard and a half of black felt costing about \$1.25. The piece I use was purchased from the American Felt Company, New York. When not in use keep this carefully rolled as creases will give trouble in a strong light.

The portrait I send herewith was made on a bright day, southern exposure with sun, the top of the window not being covered but a thin white muslin sheet was fastened to cover the lower half. A sheet thrown over a five foot screen served as a reflector for the shadow side of the subject. The dress being light in color I secured the illumination shown in the portrait with an exposure of one second.



Belle Johnson.



A WINDOW PORTRAIT.

FLORA M. COLMAN.



A WELL-FILLED PLATE.

HOWDEN WILKIE, F. R. P. S.

THE PHOTOGRAPHY OF LIGHTNING.

By HOWDEN WILKIE, F. R. P. S.

IT is only in recent years that the photography of lightning has received attention from the great body of photographers. Having spent many pleasant hours in this special branch I am jotting down a few notes from my experience for the benefit of those to whom the work is wholly new.

The most convenient type of camera for this work is the simple box form magazine hand camera with a lens working at f8 or thereabouts. This type of camera is easily loaded and the plate changing system allows of quick changing, which is often desirable. Sometimes two cameras may be engaged at one time with advantage.

The use of extra rapid plates is often advised, but I would recommend a backed orthochromatic plate of moderate speed, such as the Wellington ortho process plate (with a speed of



LIGHTNING FLASHES.

HOWDEN WILKIE, F. R. P. S.

(B) *Photograph with stationary camera.*

(A) *This flash came when preparing to cap the lens
hence multiplicity caused by movement.*

80 H. & D.) which I employed in making the illustrations accompanying this article. During the long exposure sometimes necessary when we are waiting for the forked flash, the flashes of sheet lightning which come may and often will fog the plate if it be a very fast one.

The developer I employed and recommend is pyro-soda made up as follows

No. 1 Solution.—Pyro, half ounce; metabisulphite of potash, $\frac{1}{4}$ ounce; water (distilled or boiled), 40 ounces.

No. 2 Solution.—Sodium sulphite, 4 ounces; sodium carbonate, 4 ounces; water (distilled or boiled), 40 ounces.

For use take equal quantities of No. 1 and No. 2, sufficient in bulk to cover the plate evenly during development. Work at 65 deg. Fahr. Development should be complete in five minutes.

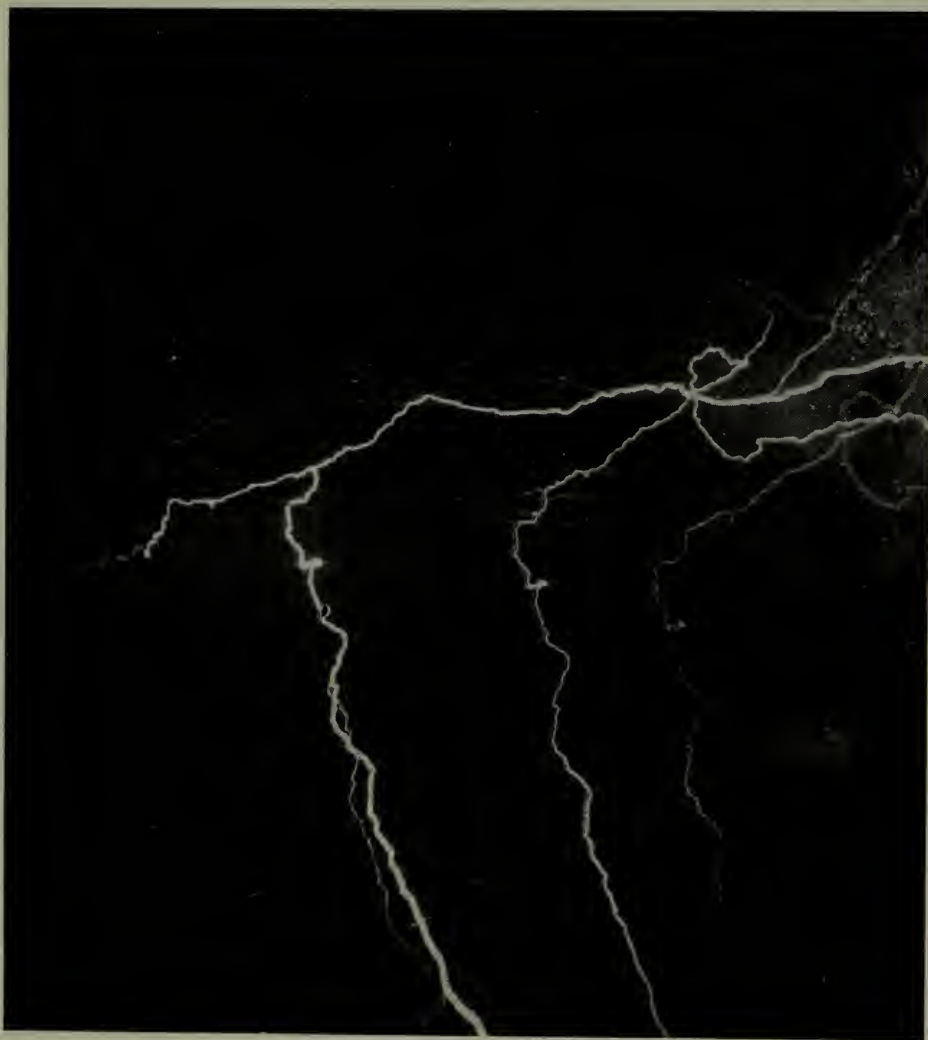
Exposure: This depends upon the lightning itself and the stop. For the latter I use f8. A smaller stop tends to give under-exposures. Strange though it may seem I cannot recall an over-exposed plate of lightning, although many photographs I have seen have been made with much larger lens apertures and with faster plates than I have suggested.

My method of exposure is to watch the storm for some few minutes to ascertain in what direction it is traveling. Place the camera in position ready for exposure and point it in the direction of the last flash, but slightly to the right or left, according to the direction in which the storm is traveling. The lens should be uncapped and left open until the first forked flash is seen in the view finder. The lens is now closed and a fresh plate made ready for the next exposure. If there is much sheet lightning while waiting for the forked flash, or if the night be not very dark, the plate will need to be frequently changed to avoid fog. Lightning should be photographed out-of-doors or from an open window, not through a closed window.

I have suggested that two cameras may be useful. They should be of the same pattern if possible with lenses of equal focal length. Many interesting results may be had by using these at the same time; keep one of them stationary and move the other rapidly from right to left during exposure. In this way we can sometimes obtain a photograph of a single flash

on one plate and a multiple of the same flash upon the other. I have not seen a stereoscopic picture of lightning, but there would seem to be no reason why this should not be the best means of studying lightning flashes and their direction.

Finally, the worker should be careful to make a full record of each exposure, giving date, place, plate, developer, exposure, direction of storm and wind, and whether the camera was stationary or not. These details will be of great service should the photographs find their way into the hands of a meteorologist.



A MULTIPLE FLASH.

HOWDEN WILKIE, F. R. P. S.



ERNEST H. WASHBURN

LATITUDE IN TANK DEVELOPMENT.

By ERNEST H. WASHBURN.

THE writer has become converted to tank development and thinks the two little prints accompanying this note show the wide scope and the wonderful latitude allowed in this method. The cloud was a snapshot of about $1/25$ second duration, intended to catch and preserve the delicate tones in the clouds alone. The interior was a long time exposure.

Both plates were developed together in a tank for 20 minutes at 65 deg. Fahr.; and were fixed, washed, and dried together. They were made on Orthonon plates and the developer was Eastman's pyro formula: Water, 48 ounces; sodium sulphite, dry, 90 grains; sodium carbonate, dry, 60 grains; pyro, 30 grains.



ERNEST H. WASHBURN.

Illustrating "Latitude in Tank Development."



General view of the Camera Room.

THE CAMERA ROOM.

By FRANK M. INGALLS.

Illustrations by the Author.



WITH the increasing demand for rooms by the many photographic societies, the following may be out of place here.

The Camera Club of the 23rd Street Y. M. C. A., New York, is described and illustrated herewith, also a plan for an improved set of rooms where space is available.

The small plan shows the general work room, 18 x 21 feet, with three dark rooms about 3 x 4 feet, connected to the main room by a doorless passageway. Each of the dark rooms contains shelves, porcelain lined sink, with hot and cold water, electric light, etc. The windows between the dark rooms and the main room are provided with one yellow and two ruby

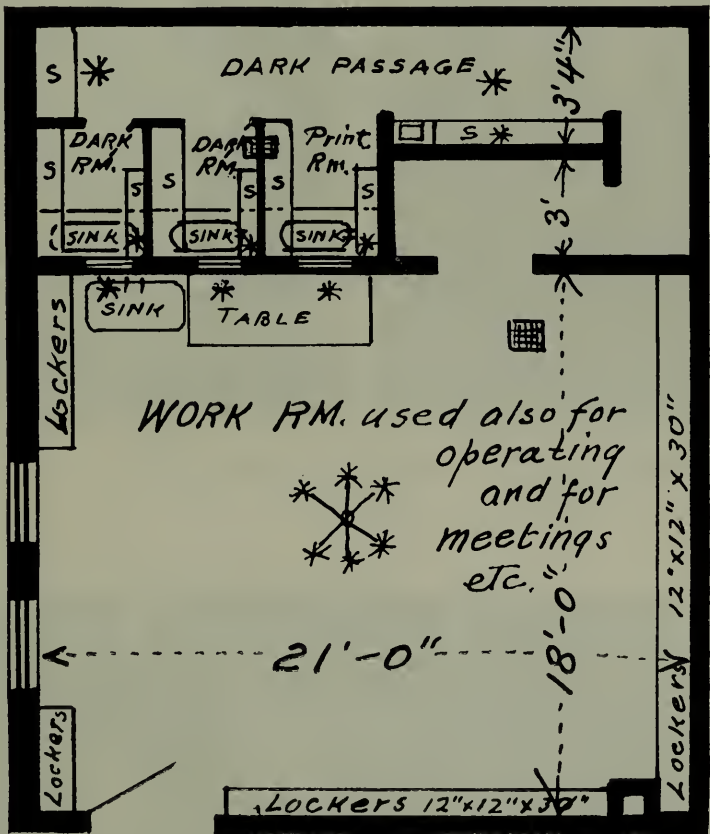


GLADIOLA.

Copyright 1908, by Charles H. Davis.

lights, of glass, so arranged that the yellow may be used alone or with one or two ruby lights. An electric lamp is placed opposite each window which serves to light the sink and table in the main room.

The main room is finished in polished oak and contains 50 lockers of the same material. The dark passageway contains shelves and an electric print box for gaslight papers, etc. The



Camera Rooms: 23rd St. Branch Y. M. C. A., New York.

window in the first darkroom contains a sliding frame which allows of quick printing by placing the Aristo light opposite it in the main room. Prints may be made here as rapidly as the paper can be placed in the frame and pushed across the opening. The room is provided with forced ventilation, as well as that from the two outside windows.

The equipment is as follows: Aristo light, 4,000 candle power, is placed in a "light-house" about 3 feet square and 8 feet tall. It may be raised or lowered and the "house" may be placed in any part of the room as it is provided with swivel



View showing windows of darkroom and worktable.



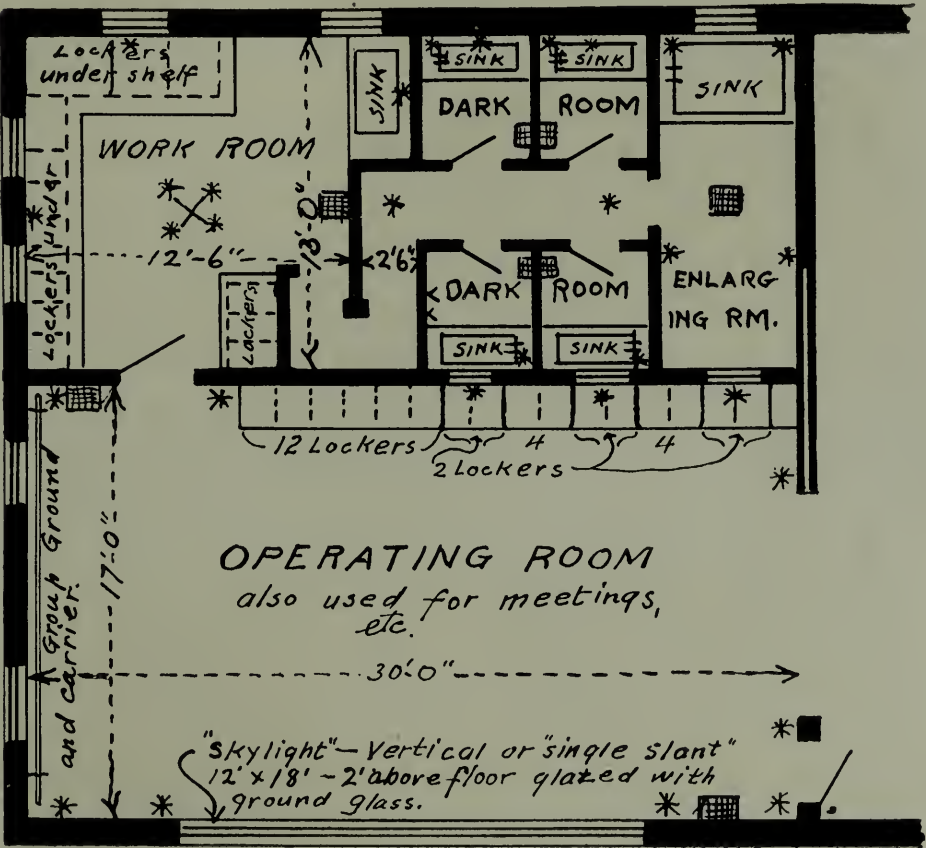
Stairway leading to Camera Room.



Enlarging Equipment.

castors. One side of the house contains a ground glass so the light may be used for enlarging, etc., and one side has an opening covered with tracing cloth and curtains, for portrait work and copying. The lower part is used as a closet in which are stored carbons, tools, etc.

A Century Portrait outfit, 8 x 10, with all accessories, capable of holding any size of plate from lantern slide to 8 x 10, is one



A Suggestion for Camera Club Rooms.

of the best pieces of apparatus the club has. An 11 x 14 enlarging, reducing, and copying camera with lens and accessories is in daily use. Drying racks, electric fan, scales, etc., are provided.

The rooms described are very small for so large a club and the improved plan, which was suggested to the Boston Y. M. C. A., is shown, and is self explanatory.

STAND OR TANK DEVELOPMENT.

By ALEXANDER MACKIE.



AFTER having, from time to time, for a period of about eight and twenty years, successfully employed the system of developing a number of plates together in a grooved tank containing the developer, it comes to me as a surprise to know that the system, as a system, is impugnable as being less reliable than the ordinary method. That the physical conditions involved may require certain precautions is doubtless a fact, but that is no more cogent an objection than that the physical conditions of development in a tray have to be met by rocking the tray. That the chemical effect (or results) can be influenced, at any rate to an appreciable extent, by the position of the plate during development does not appear to me to be probable, and the only real matter for consideration is the choice of a developing agent and the adjustment of the various constituents of the developer, having regard to the fact that it is to be used in a more diluted state than the normal.

In my own practice I have never met with any failure really attributable to the system, but since I wrote to the *British Journal of Photography* on the subject of "Stand Development," I have had a number of communications from various workers relating to defective results in their experience. It is, however, only with regard to one kind of defect that I have found any difficulty in diagnosing the cause and prescribing the remedy.

In three or four cases it was complained that the negatives were almost like finely ground glass in the parts unaffected by light that ought to be clear. This was due to a deposit of lime from the water. A wash of acidulated water removed the deposit at once. The use of an acid fixing bath would have been equally effective.



EARLY MORNING: BOULOGNE HARBOUR.

W. J. Farthing.



ROSEMARY.

Copyright by Charles H. Davis.

In one case the plate was fogged round the edges. As the fog extended round the four sides of the plate, it was clearly not due to any chemical effect of the material of the tank and must have been inherent in the plate.

In one case the negatives were reversed: that is appeared as positives by transmitted light. It was explained that the plates had been left in the developer all night, Rodinal about 1 in 200. It was evident that the plates had been extremely under-exposed. A faint normal reduction had taken place but a much stronger deposit of a different character occurred on the parts representing the shadows, evidently due to silver dissolved from the film and subsequently reduced.

Several examples have been brought to my notice of streamers of increased density over the denser parts of the negative, the sky of a landscape for example, proceeding from parts representing dark objects or shadows. This defect I attribute to the circulation of the developer in the tank, the partly exhausted developer being reinforced by the fully active developer from the dark parts. The circulating motion is probably entirely due to variations of temperature caused either by comparatively warm developer used in a cold tank of thick porcelain or metal, or cold developer used in a warmer tank. The obvious prevention, if this is the explanation, would be to approximate the temperature in tank, developer, and atmosphere of the dark room, also to use a tank of some material of low conductive quality such as wood rendered waterproof by soaking in melted paraffin wax. Upon the whole, wood seems to be the most suitable material from every point of view, and preferably the tank should be constructed with a removable rack after the fashion of the ordinary washing tanks so that the batch of negatives might be removed bodily to another tank for fixing and again to another for washing, without entailing fingering each negative.

R. DÜRRHKOOP.



NIGHT PHOTOGRAPHY.

By W. H. BROADWELL.



Y night photography I do not mean to take a photograph by moonlight but, rather by the aid of light from the electric arc or even the common street gas lamps. When I first took up this kind of work some five years or more ago there had been very little written telling how to go at it and when I made my first exposure I was literally working in the dark.

I decided one afternoon that I would make an attempt that night, and after supper I loaded a plateholder and found when I got to the door it had started raining and was coming down as though it meant business. Well, so did I. I put on a pair of high boots and a leather coat; took a very large umbrella; hunted up an old rubber focusing cloth to cover my camera and started. I had chosen a street scene two blocks away from home, and just think of my troubles to focus, hold the rubber cloth from blowing off the camera, and holding an umbrella over the box and myself at the same time.

Perseverance conquered. I put my holder in place, withdrew the slide and decided to give one half hour exposure, as the nearest electric light was several hundred feet away and everything looked pretty dark on the screen.

After twenty-seven minutes had expired the rain ceased and as I was nearly out of patience I grabbed the tripod, placed it against my shoulder under the umbrella and started home, forgetting to put the slide back or closing my lens. I developed the plate immediately, carrying the development along till it had good density. The result is shown in No. 1, Burnett street, Newark, N. J.

This view made as good a subject as any I have ever taken, the wet asphalt bringing out the shadows that would not be shown if it had been dry.

No. 2.—A Relic from Morro Castle, Havana, was taken some months later under better conditions. There was a light fall of snow on the ground and an arc light directly in front of



Upper: A Doorway
Lower: Burnett Street, Newark, N. J.

Upper: A Relic from Morro Castle, Havana.
Lower: Public Library, Newark, N. J.

Illustrating "NIGHT PHOTOGRAPHY" by W. H. BROADWELL.

the gun and to my right about 150 feet away. On the left the halated spot is an arc light which I could not cover by interposing a tree as that would have caused me to move too far to the left. This negative by being carried to fair density makes a fine enlargement, holding all details.

No. 3.—The Free Public Library, is built of light colored stone, nearly white. I had doubts when taking this whether the windows would show. The halation around the main entrance was unavoidable, there being a globe of ground glass containing incandescent lights on each side of the door. The doorway, of course, had to be overtimed to get details in the rest of the picture. Notice the tree to the right covers an arc light; a thing it is always advisable to do when possible. While exposing for this, three boys came up and after looking over my outfit one of them saluted me thus, "What yer doin', takin' a picture? Can we 'uns git in it?" "Yes," I said, "go over and stand on the steps, but you must stand perfectly still for five minutes." I had no idea that they would stay that long or that they would show, but two of them stood leaning against the front of the building long after I had closed my shutter.

No. 4.—The most interesting of the series I have left till the last, considering that it comes under another head. There is no external light on this whatever, the light coming from one lone incandescent under the front arch. This exposure was made about 11.45 P. M., when fewer people or trolleys would pass than if taken earlier in the evening. I had intended giving a 15 minute exposure but after having exposed for 10 minutes the light was turned off, leaving me in total darkness, so I folded up my outfit and silently stole away to my dark-room.

This is an under-exposure and gave me some trouble in developing. Neither is it as sharply focused as I would like, as I was crowded up against the buildings on the opposite side of the street and the light was very dim.

Some of these views were, under existing circumstances, rather difficult to get, and I hope I have not discouraged anyone from making an attempt at this class of work, as there are many interesting subjects in most large cities, public buildings, churches, statues, etc., easy to get and waiting for the enthusiast to come along and discover their nocturnal beauty.

Since writing the above article I have seen one written by another photographer and as his experience and ideas, as expressed, differ from mine, I make mention of them in order.

The exposure necessary depends on the speed of the lens used and on the light conditions; how far away and how it falls on the view. If 15 minutes are given with snow on the ground, it will require but very little more time without snow; probably not more than 5 minutes more. I have taken most of my views in summer giving 8 to 10 minutes' exposure with stop f8.

Backing plates.—It is not necessary to do this although it does no harm. For night views some halation makes the picture appear natural. I have never used a backed plate for this work, but use the Cramer Crown.

The Camera.—A camera of the fixed focus type not only gives, as a rule, poor results but you cannot compose the view. The finder cannot be used at all. By covering your head with focusing cloth for a minute or two before attempting to focus, your eyes will quickly get accustomed to the small amount of light reaching the ground glass; you can focus roughly on the lights in the field of view; then on the nearby objects that the light reaches. You will be surprised at what can be seen on the glass after you have been under the cloth for two minutes. The lens must of course be wide open for focusing; get everything as sharp focus as possible, focusing from the middle distance toward you; stop the lens down to f8 or 16 U. S., which will sharpen up everything, then make your exposure. If you have a good rectilinear lens try an exposure of 10 minutes. I find no difference in the final result between a plate exposed 10 minutes and one exposed for 30 minutes, but the shorter exposure will develop slower, which is better in the end than if it had a longer exposure and came up quicker. It will give you better details in the shadows, and if necessary you can make a local reduction, which you will seldom have to do unless the subject has had entirely too much exposure. I have made exposures as short as 3 minutes. All the views which illustrate this article are straight 'undoctored' prints.



WILLIAM CROOKE.




"PENSIEROSO."

Louis Fleckenstein.

SKIES.

By J. A. ANDERSON.

N the ANNUAL, for 1904, the writer was permitted to say something on the value of clouds in the photographic landscape and the methods of introducing them. Here it is proposed simply to offer a few hints on the latter point with respect to obtaining pictorial effect.

The photographer cannot, as the painter, model and arrange his clouds to accord with his ideas of fitness but must accept them as he finds them, either photographed with the view or separately and "adapted." The former is not always practicable and, when it is, the combination may not, in the print, prove satisfactory, any more than a landscape taken at random is likely to be as pleasing as one carefully composed. On the other hand, a collection of purely cloud negatives may not contain just what is needed for every case. Hence the "ideal" cannot always be attained and therefore these suggestions are only to be taken as indicating what is desirable and to be attained as nearly as practicable.

Clouds adapted to a landscape should appear as a natural part of the composition and not look like an artificial addition. To this end there should be an agreeable correspondence in general tone. A dark, heavy sky, suited to a subject of somber aspect, is out of place with one in bright sunshine. Size and arrangement are also to be considered. A large cloud or two, with a small, dainty landscape, would present an absurd effect.

Usually startling effects are to be avoided, as well as any arrangement in which the clouds would so dominate the picture as to draw attention from the subject designed to be of chief interest.

Too much crowding of the sky space with clouds is to be guarded against and, on the other hand, wide spaces between isolated clouds may not be pleasing. The "spacing" must depend, however, much on the character of the picture. Some-

times, in a gray sky, a mere suggestion of cloud form is enough. In a sky space almost covered by tree tops fine effects may be produced by printing clouds so as to appear to peep through the spaces.

The arrangement of clouds should be in conformity with the methods of nature. For instance, large clouds coming down to the sea line, and perhaps cut by it, do not present a natural arrangement. Clouds spread over the sky appear to grow smaller as they approach the horizon, by reason of their increasing distance from the observer. This is to be kept in mind in placing clouds in the print.



CLOUDS IMPROPERLY ARRANGED.

J. A. ANDERSON.

It has been recommended to place cloud reflections in spaces representing still water, by printing with the cloud negative turned bottom up. The writer has had too little experience with the plan to speak confidently of it. It would seem to be difficult to get the clouds in position to accord with the natural angle of reflection. At any rate it will be best to print the "reflected" clouds rather lightly.

Perhaps the most generally useful cloud forms, for pictorial purposes, are those of the bright cumulus variety, which float lazily along on a summer afternoon or linger in the sky for a day or two on the breaking up of a storm. These should be

photographed when the light is such that they are softly rounded, without heavy shadows on the lower parts. Such clouds are often seen in great perfection at the seaside and at mountain lakes, where the conditions as to moisture are particularly favorable to effective cloud formation and where much enjoyment may be found in the study of the pictorial possibilities of these beautiful productions of nature.

In making his selections of clouds the photographer will find much help from some knowledge of the rules respecting line and balance and other points in composition, by which artists are governed. This article does not undertake to discuss the



CLOUDS: IN BRIGHT SUNSHINE.

J. A. ANDERSON.

principles of art, the object being to present suggestions for those having but a limited knowledge of those principles.

One who buys a camera or a paint brush does not thereby become an artist and the worker with the camera is fortunate if he is possessed of some artistic sense and the perseverance to cultivate it by study and hard work. The study of the works of the masters in composition will be of great assistance.

Fortunately for the photographer working with clouds, his material has so much inherent beauty that, with a moderate degree of taste and care, he cannot go very far astray in using it for enhancing the value of his pictures.



BINDING THE WHEEL.

F. A. TINKER.

THE AUTOCHROME PROCESS.

By MALCOLM DEAN MILLER, A.B., M.D.



LESS THAN a year ago few photographic enthusiasts believed that color photography would come in this generation. The wonderful starch-grain process of the Messrs. Lumière has come and conquered within that time. Best of all its remarkable qualities is the absolute fidelity of its rendering. Hitherto all three color processes depending on colored inks have been very unsatisfactory to the artistic sense of one whose eye has been trained to see and to appreciate the subtle tones of nature. But the Autochrome plate is absolutely accurate—it shows us what artists have insisted, that a shadow on white is blue or violet. The primaries are so perfectly balanced that with correct exposure one may be sure that the colors are scientifically correct.

As regards working, there is only one part of the process which offers any real difficulty, the exposure. Doubtless those who have the paper tinting exposure meters, such as the Wynne or the Watkins, will find them perfectly satisfactory when used according to the data given by the accomplished editor of *Photography*. These data are available in the American market in a pamphlet entitled "Real Color Photography," to be found at most stock houses. But I have never found a simpler nor more accurate meter than the "Cheape," which costs only thirty-five cents. Taking the published figure of one second at F8 in bright midday summer sunlight as a standard, and comparing it with the exposure for a fast plate (Seed 27, or Cramer Crown) it will be seen that the Autochrome exposure is just one hundred times that required for the fast plate. I have used this factor, calculating the exposure by meter and multiplying by one hundred, with practically perfect results.

The chief difference one has to allow for is this—with common plates one has to give more time for dark objects, whereas

with the Autochrome this seems unnecessary. The allowance for strength of light or very dark near-foreground is all that is needed. The reason for this is that the Autochrome plate is sensitive to the darkest colors found in nature. Now, when one times perfectly for the objects in the view it will generally be found that the sky and clouds have burned right through the emulsion, leaving nothing but the color grains. This is only what one would expect with an emulsion thinner than the paper on which this is printed. Some form of sky-shade, then, is necessary to equalize the exposure.

Such a shade, made to my specifications, has given me good results. It consists of a metal cap to fit the lens hood and to cover the upper third or half of the lens. This leaves the lower segment of the lens clear, while the upper part is shaded by the bars formed by cutting parallel slots in the metal. The width of slot to that of bar is as one to two. The screen does not affect the sharpness of the image, but does reduce the sky light enough to render clouds, blue sky, and foreground in harmonious balance.

Out of doors, unless there is no wind at all, I have found it necessary to use small apertures to stop the motion of leaves and branches. This gives a further advantage, that of exposing more accurately with the cap, and thus keeping within the narrow latitude of the plate, which is hardly 5%. Slight over-exposure, however, is preferable to under-exposure, though it washes out the color in the highest lights.

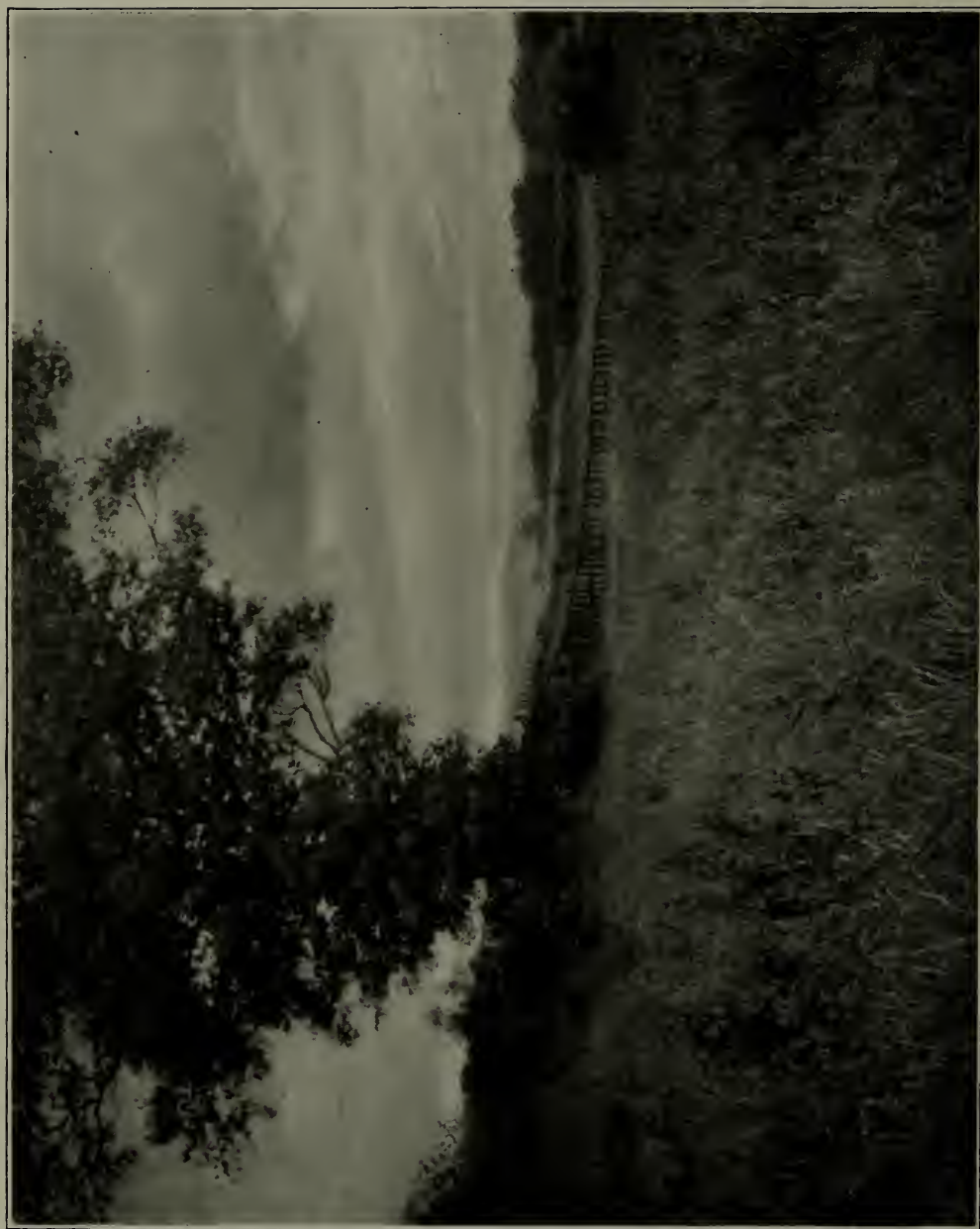
The manipulation of these plates needs little comment. Follow formulæ strictly, have all the solutions at 65 deg. Fahr., and you will get perfect results from correct exposures. The acid permanganate, Solution C, should be made up in small quantities and replaced by fresh as soon as the slightest sign of precipitation appears.

The public seems to regard the process coldly, because, forsooth, the pictures cannot be printed on paper. When this method of reproduction is perfected, however, I venture to predict that it will be a great disappointment. No paper print can equal in beauty the luminosity and brilliancy of the Autochrome on glass viewed by transmitted light.



GOOSEBERRIES.

ROBERT BURNIE.



AFTERNOON.

JOHN M. WHITEHEAD.

STANDARD STOCK SOLUTIONS.

By E. H. WASHBURN.



THE advantages of three stock solutions for pyro developers are now so generally recognized as to need no argument. Plate manufacturers in this country nearly all recommend it, and, of late, show such a decided tendency to plan their pyro developers along similar lines, that it is now a simple matter to make up a set of three standard solutions, which are universal for all brands.

With these, by mixing in different proportions, and adding the proper amount of water, it is very easy and convenient to make up the exact formula called for on any instruction sheet accompanying a box of plates.

The three very simple solutions are prepared as follows:

STOCK SOLUTION A.

Pyro	1 ounce.
Oxalic acid	15 grains.
Water	16 ounces.

In preparing this, the oxalic acid should be dissolved in the water before adding the pyro, for the sake of better keeping qualities.

STOCK SOLUTION B.

Sulphite of soda, dry.....	2 ounces.
Water up to.....	16 ounces.

STOCK SOLUTION C.

Carbonate of soda, dry.....	1 ounce.
Water to	16 ounces.

One ounce of each of the stock solutions contains about 30 grains pyro; 60 grains sulphite of soda, and 30 grains carbonate of soda. (The oxalic acid in solution A merely acts as a preservative to the pyro while in stock solution.) A very satisfactory formula for general use contains 1 ounce of A; 1 ounce of B; 1½ ounces of C, and water up to 15 ounces. This forms what is termed a "2 grain pyro" developer; each ounce containing approximately 2 grains of pyro. The Wat-

kins factor for this is 12. Very good results are obtained without reference to factor, by developing for four minutes at 65 deg. Fahr.

Many workers, at times, want to try some other plate than the one they generally use and as the above stock solutions may be so very easily regulated to suit any plate that it will appeal to any who are inclined to experiment, or for any reason want to test a plate, and give it the advantage of being developed according to its own formula.

For making exact formulas for particular makes of plates the proportions are as below :

	A	B	C	WATER
For Cramer plates	1 oz.	1 oz.	1½ ozs.	10 ozs.
For Lumière plates	½ oz.	1 oz.	1 oz.	7 to 10 ozs.
For Hammer plates	½ oz.	1 oz.	1 oz.	9 to 12 ozs.
For Stanley plates	1 oz.	1½ ozs.	3 ozs.	10 ozs.
For Seed plates	1 oz.	1 oz.	2 ozs.	7 to 10 ozs.

These for single coated. Use 18 ounces water for non-halation plates.

For Standard Plates 1 oz. A; 1 oz. B; 1 oz. C; Water 6 ozs. for single coated; 12 ozs. for Orthonon.

For Eastman film tank developer take 1 ounce A; 1½ ounces B; 2 ounces C; water to 48 ounces.

Develop for twenty minutes at 65 deg. Fahr.

All of the above have been adapted from the working instructions sent out by the respective manufacturers, on their printed slips in each box of plates, and are exactly the same as if a set of separate solutions was used for each different brand. The simplicity and ease of the above method of working should make it popular. By a few minutes' calculation it can be adapted to any formula desired.



ESTELLE.

Copyright by Chas. H. Davis, N. Y.



"Nothing to do the livelong day
But run and shout and laugh and play."

FRANK A. RUGG.

ENLARGING.

By ARTHUR E. MAYER.

THE majority of amateur photographers do not realize the satisfaction that can be obtained from a few hours work spent in enlarging pictures. Nearly every one who has been at photography for a while has a number of negatives which would make very interesting as well as artistic enlargements. Most negatives of the smaller sizes can be enlarged to 16 x 20 inches or more, depending upon the sharpness of the original negative. This size is a very nice one for framing, being large enough to be distinctly seen across the room without the appearance of being too large.

To proceed with the necessary apparatus: the first requisite is a room with two windows and for each of these a frame

should be made to fit into the window casing. One of these windows is to let in non-actinic light for developing, and the other to let actinic light through the camera to the sensitive paper, the latter being, if possible, a north window so that the strength of light will be constant.

The window frame through which the non-actinic developing light comes should have the top half covered with several thicknesses of black paper, and it is better to have this backed with cloth or old burlap, while the lower half is covered with cheese cloth and then with two thicknesses of post-office paper. The north window frame should have the upper three-quarters covered over with black paper, in the same manner as the other frame, and the lower quarter covered with $\frac{7}{8}$ inch boards through which a hole one and one half inches wider and longer than the back of the camera is cut. Boards about six inches wide are nailed round this hole, end on, so that they form a box for the back of the camera to slip into. It is not well to have the camera fit too closely into this box and the light coming in around the four sides is stopped with the focusing cloth. A piece of ground glass is fastened on the outside of the opening so that it completely covers the hole.

This part of the frame being completed, nail a piece of 2 x 4 inch plank about a foot long to the frame, end on, and about six or seven inches below the box bounding the hole in the frame. The next step is to get two pieces of 2 x 4 inch and cleat them with four pieces of wood parallel and about one foot apart. One end of this is placed and bolted to the shelf under the opening in the frame, after it has been placed in position, and the other end rested on a substantial stand in the enlarging room.

Upon this track there should be an easel which will slide the whole length. An old drawing board fastened by means of iron shelf brackets to a piece of board answers very well. This board, to which the drawing board is fastened, should be just the width of the track and having a piece on either end projecting downward to always keep the board parallel to lens and negative.

There should be two working tables in the room, one under the orange window for developing, and one elsewhere for holding washing and fixing trays.

The trays should be at least 18 x 24 inches, or larger if desired. These can be made from grocery boxes cut down to the required size and about six inches deep. The inside is covered with cheap oil cloth and then given three or four coats of black asphaltum roofing paint. While the last coat of paint is still wet lay a piece of glass in the tray for developing so that it will cover the bottom. By means of this glass a print can be developed to better advantage with a small amount of developer as it will then lie perfectly flat.



What joy is there in "being a boy."

FRANK A. RUGG.

To proceed with the actual making of the picture. Place a mirror outside the windows so that it will reflect the light from the clouds into the back of the camera and by this means the time of exposure will be much diminished. Remove the ground glass focusing screen on the camera and insert the negative in the place made for the plateholder, using a strip of wood to hold it up in position if necessary. Exclude all light from around the camera by means of the focusing cloth. The image is then focused on the easel which should be covered with white paper, and after it is quite sharp put a small stop in the lens; put on a heavy ray filter and close the shutter. Pin the sensitive paper by means of thumb tacks to the easel, open the

lens and if the image falls on the paper as desired close the shutter, put in a large stop and remove the ray filter. Everything is now ready for the exposure, the length of which should have been determined by test strips.

There are many good papers on the market for enlarging but the one that I have found to give the best results is Azo. If Azo is the paper to be used the following is a developing formula which will give excellent results:

Sulphite of soda	190 grains.
Amidol	32 "
Water	16 ounces.
10% bromide potassium solution.....	12 drops.
Clearing solution	9 "

The fixing can well be carried on with a regular acid hypo bath such as the following:

Hypo	16 ounces.
Water	64 "

Then add the following:

Water	5 ounces.
Sulphite of soda	1/2 ounce.
Acetic acid, glacial.....	1 "
Alum, potash	1 "

CLEARING SOLUTION.

Iodine	7 grains.
Cyanide potassium	7 "
Iodide potassium	14 "
Water	1/2 ounce.

If the exposure seems to take longer than it should, it can be shortened slightly by covering the ground glass with lubricating oil and then wiping off as much as possible with a cloth.

EDITORIAL NOTE.—Mr. Frank A. Rugg, whose delightful pictures of children are here given, sent a few verses on "Being a Boy" to accompany the prints. These we omit, the pictures needing no embellishment.

TECHNIQUE—GOOD AND BAD.

By W. S. DAVIS.



ALTHOUGH technique *vs.* art in photography has been discussed so many times that the subject would seem to have been exhausted, yet a few words on the importance of proper technique in pictorial or artistic photography may not be altogether useless.

In the first place it might be well to find out if possible what is considered good technique, and for that matter what is meant by "technique" anyway, in view of the hazy definitions sometimes given of it. If you ask some professional photographers (especially of the older school) they will no doubt tell you good technique consisted in obtaining clear sharp negatives and prints, regardless of the style of subject. That is one idea regarding the matter, but it would hardly be an answer to the question "what is technique?" Briefly then, technique, whether in photography or painting, may be defined as a term covering the various processes and manipulations employed, and is good or bad in exact proportion to its success or failure in producing the desired result in the finished work. What would be good technique (because suitable) with one subject, might be bad if applied to another which required different treatment. The question of the negative being sharp and clear, or up to any other arbitrary standard, has nothing to do with the matter, as it is impossible to have any set standard, the technical excellence of a negative depending altogether upon what is wanted from it. On the same principle no one can say that any particular printing process gives the most perfect results, yet many maintain that a highly glazed print is the highest standard of *technical* excellence, when it would be much nearer the mark to say such a print represented the highest mechanical finish, which is not by any means the same thing. There are however, certain limitations, standards if one prefers to call them such, the bounds of which can seldom be overstepped with good taste.



DILIGENCE.

F. A. TINKER.

If the camera be used simply for securing truthful "record of fact" views of objects or localities, attention must be paid not only to the proper rendering of light and shade, but of color as well, and what is of no less importance, linear and aerial perspective. A negative of this class fulfilling these requirements might be considered of good technique for the purpose required, and a print from such a negative should represent the subject as correctly as may be done in monochrome.

Considered from the pictorial standpoint, however, the question of what constitutes good technique has been a matter of much dispute, and it is well there should be a difference of opinion and methods. Nevertheless there are limits, beyond which individuality of treatment becomes simply eccentricity, and it is this point I am coming to. In the first place, a serious fault in many would-be pictorial photographs is untrue tonality. By this I don't refer altogether to black shadows and chalky high lights, as bad as they are, but to another extreme, the representation of everything (regardless of style of subject) by a few flat smudges of gray, for it is just as untrue to both nature and art to turn out prints consisting of but two or three tones of muddy gray, lacking all suggestion of transparency and gradation, as it is to go to the other extreme; yet no one will have to look far to find landscapes in which both near and distant objects are reduced to a few flat tones of equal strength, without an indication of true atmospheric effect, and portraits and figure studies in which the models are so vaguely rendered as to make it a matter of conjecture whether they were natives of Africa or China.

It is true a picture must leave something to the imagination, nevertheless the idea it is desired to convey should be shown definitely enough for the spectator's imagination to have something to work upon. Such results are not necessarily caused by extremely soft focusing, for the photographic image may not only be softly focused but even blurred, and still bring out clearly the characteristic features of the subject, if proper attention be paid to the lighting, and it is for this reason the best pictorial photographers are able to produce striking results. If those who make the flat smudges referred to, under the impression that by doing such work they are showing their

“individuality,” would only think more about the subject, and the mode of treatment best adapted to it, together with the idea they wish to convey, I am quite sure their work would be far more satisfactory, for in my opinion the “individuality” of the subject should be considered first, and then, if the worker is truly original, his “individuality” of treatment will not fail to appear in the finished work. Above all things, one should not try to imitate a peculiar style or technique because some one else happened to apply it successfully to a certain subject.

Having pointed out some of the errors in technique sometimes seen, faults which would never be excused in painting, we now come to the question of what are the essentials to good pictorial technique, and while the rules are broad enough, there are a few things which form the foundation of all good work, which one cannot afford to ignore, such for example as suitable arrangement of light and shade, luminosity, and aerial perspective, to say nothing of composition. It not being my intention to enter upon the subject of composition and lighting here, suffice it to say that these two things are the principal means by which the individual ideas of the worker can be best expressed, but to secure harmony and the feeling of truth in the work, attention must be paid to all the other things which will help to produce a more perfect result, and it is to these I would direct attention. As the effect of light and air is essential in a picture, one should aim to secure luminosity, and in monochrome work this can only be secured by the preservation of sufficient detail in the shadows to keep them transparent, and to separate the different objects in the composition into their various planes so that the eye may recognize the relative distances between them, careful attention must be given to the representation of aerial perspective, which is best done by a differentiation of focus, so that the principal feature of the composition may be brought out with due emphasis.


These points are all recognized as essential to good art, not only by painters in color but illustrators and engravers who work in black and white, as well, and an examination of the work of the best artists will make the matter clearer than pages of description.



R. DÜHRKOOP

THE CHEMICAL CONTROL AND MODIFICATION OF BROMIDE PRINTS.

By H. D'ARCY POWER, M. D.

ONTROL or modification of prints is necessary, first, because photography is not always capable of reproducing what the eye can see and, secondly, because many now use photography to make pictures—for the delight of the eye or the stimulation of the emotions. How they make them is nobody's business so long as they conform to the canons of art. But that they may do this demands that the worker possess art training and a good technique. If he has not the first, and does not care to work for the second, he had better leave this process alone, for he will waste more good bromide paper than make good prints. It may be asked why use chemical control when we can print in gum or oil? Simply this—the silver image possesses the power of reproducing texture in a manner that is impossible in any other medium; it is the glory of photography, and this beauty of the photographic print is left unimpaired by the processes that follow.

The technique I am about to describe can hardly be called new, inasmuch as the removal of all or part of the silver image by a reducer has been frequently advocated—and doubtless in some hands has given good results; but, whether the solvent used was Farmer's reducer, or the iodine and potassium cyanide solution, it was always very difficult to control. Either it went where it was not wanted, or it removed too much at the point intended. In either case the print was ruined and nothing could be done to rectify the damage.

By my method everything is under control, nothing is removed but what can be exactly restored in its original form. How is this possible? Very simply, let me explain: Farmer's reducer in its latest and best form, consists of potassium ferricyanide, potassium bromide and hypo. The two first salts act upon the silver image of a bromide print, converting

the metallic deposit into creamy white silver bromide. The hypo dissolves this, removing it entirely. Such being the case we can always effect our reduction by two steps—we first place the print in a weak solution of the two first salts (this is the ordinary bleaching solution for the direct sulphuretting of bromide, and sold by the Kodak company in capsules), and when it has become light enough, it is transferred to plain hypo solution which removes the changed silver.

But suppose, as may easily happen, that the reduction has got beyond control, and bleached the print to excess. All that need be done is to wash, and place it in any non-staining developer, and the image is immediately restored. By using the developer very weak it can be restored to the exact density required, or it may be fully restored and reduced afresh. Thus we can work backward and forward until the exact effect required is obtained, and when satisfied, a five minutes' immersion in the hypo bath, followed by a wash will render our picture permanent. So far I have only spoken of general alterations in the density, but it is obvious that, by the use of brushes, local reduction or local redevelopment is equally possible; and, providing the photographer is an artist and acquires the necessary technique, the chemical modification of a bromide print is as capable of expressing individual control as gum or oil.

As an example of how far such modification may go, I place in illustrations prints I and IA. These two prints were identical; printed from the same negative, for the same time, and developed simultaneously. The original print was hopeless, the negative, under-exposed and under-developed, could give nothing else; but the effect shown in IA was one I had actually seen at that spot, when I was without a camera to record it. The result is of course purely dependent on knowledge of light and shade and skill in removing or restoring the silver deposit. It is less photographic than an oil print, and must seek its justification in its success—as indeed must all attempts at art.

Now for the exact details of working. Prepare: A sheet of wet blotting paper on a board; two or three camel's hair brushes, one large, one small; one or two tufts of absorbent

cotton; a little developer in a cup (any kind but pyro); a solution of 10 grains of potassium ferricyanide; 20 grains of potassium bromide in 1 ounce of water; and a dish of hypo.

The print to be modified is soaked in water, placed on the damp blotting paper, and surface dried with another blotter.



A little of the bleaching fluid is put in a saucer and diluted several times with water; a brush is charged with the mixture and carefully applied to the surface to be lightened or removed. If the surface to be modified is a large one, it is better to use the reducer weak and rapidly with a swab of

absorbent cotton. On the other hand if high lights are to be added or small dark objects entirely removed, then use the reducer full strength with a brush that is small and almost dry. Thus applied there will be no spreading. In the illustration the cloud effect was determined on, and the silver deposit rapidly removed with a swab, approaching close to, but not touching the line of the hills and the roof of the house. Then, using a No. 5 flat camel's hair brush charged with strong solution, the sky line was carefully cleared. If by the use of the reducer the desired effect has been obtained, then all that is necessary is to rinse the print in water and fix it in hypo.

But, it may happen that the action has gone too far, or that for some purpose a deposit of silver is required in a cleared area. In my illustration both of these conditions were present. There were points in the foreground that were entirely too light, the edge of the clouds was too hard, and I wanted a floating cloud in the clear light of the western sky, such as is so often seen in late sunsets. To obtain these the print is rinsed free of reducer, and a weak amidol or other developer carefully applied to the parts that are to be restored. In this local redevelopment it is particularly necessary to work with a brush almost dry and allow a little time for the solution to act. If the action is proceeding too far it can be instantly stopped by applying a swab of absorbent cotton moistened with a little weak acid. An error in over redevelopment can, of course, be corrected by fresh reduction. It is this complete control which constitutes both the novelty and the strength of the process. When all is as desired the print is hypo fixed, washed, and dried.

Usually there is no indication of treatment in the parts reduced, but should the slightest differences of tint develop, it can be entirely removed by bleaching in an acid bichromate solution, (Bichromate of potash, 5 per cent.; hydrochloric acid, 1 per cent.), washing and redeveloping. From this final print any number of ozobrome copies can be made.

The above process provides for the modification of the print by lighting any part required; it is also possible to use a method that will permit of both adding to as well as taking from the original deposit. Make a solution of mercuric chloride, 1 in 2,000; immerse the print in this bath until the

lightest parts of the picture have lightened to the tone you wish them to be. The bichloride attacks all parts simultaneously, but the shadows will show little action at a time that



the higher tones are much bleached. Now immerse the print in a bath of 2 per cent hydrochloric acid for a minute, wash it, surface dry it with blotting paper, and with a brush and non-

staining developer proceed to develop the parts that you desire to darken. By grading the strength of the developer, and checking with weak acid on a sponge, the worker can completely control the final tone.

I give an example of the results of this method in prints 2A and 2B. The modified print is much closer to the effect I see every morning opposite my window than is the original print. Prints modified in this manner do not require fixing. Simply wash, and dry. They show more double toning than those bleached by ferricyanide, and do not permit of copying in ozobrome. They can, however, be photographed and copies made from the new negative. I have given extreme examples of modification, only to be undertaken with knowledge and care, but there is a large field for useful minor changes.

A SNOW MUSHROOM.

See illustration on opposite page.

This curious structure was photographed by Dr. Vaughan Cornish, F.R.G.S., of London, at Glacier House, in the Selkirk Mountains, British Columbia. It is a natural snow-cap resting on the stump of a felled tree. The cap is nine feet in diameter and nearly four feet thick. Its weight has caused the rim to bend so that the top becomes a curved dome. The originally horizontal strata of the snow slope steeply downwards near the rim and small pieces break off where the strength is least, hence the edges are rough though the top is smooth. The cap acts as an umbrella sheltering the ground beneath from snowfall. The structure had taken some months to grow and would have been difficult to dislodge, for the snow was firmly welded by its own pressure. The total weight of the snow cap was calculated at about one ton.



A SNOW MUSHROOM.

See Note on preceding page.

DR. VAUGHAN CORNISH, F.R.G.S.




WHITE CURRANTS.

ROBERT BURNIE.

PHOTOGRAPHING WILD BIRDS.

By WILLIAM FARREN.

HE SUCCESS of the naturalist photographer, and the ultimate usefulness of his work depends more on his skill as a naturalist, on his sympathy with wild creatures, and his powers of observation, leading him to a knowledge of their minutest habits, than to his skill as a photographer.

The technicalities of photography can be acquired in a short time, but the qualities which go to the making of a successful naturalist are generally born with the man.

Comparatively few of the hundreds of photographs of wild birds, which have been taken during the last ten or twelve years are of real scientific interest or educational value. This is owing in part, to the aims of the majority of workers being limited to a desire to obtain pretty pictures, and to their inadequate knowledge of the habits of birds. On the other hand some really good work has been done by systematic workers, and many novel and interesting details in the home life of wild birds have been recorded, and illustrated by photographs.

The work entails the devotion of much time and patience, and may easily become irksome, unless the worker is armed with unbounded enthusiasm, and is prepared to forget failures in the joy of successes. An experienced field-naturalist will succeed in securing interesting pictures, while other, and possibly better, photographers fail, simply because his knowledge of the habits of the particular species of bird with which he may be working is a guide to him as to the best method of procedure, and his past experience in watching and studying birds in the field will prove good training for the long periods of silent waiting which bird photography demands,—besides which he will have acquired that quiet hunter-like method of moving which does not startle, but harmonizes with the movement of wild creatures.

There is a popular idea, that the photography of wild birds consists of stalking them with a hand camera; as a matter of

fact very little can be done in this way, except with certain species which congregate in large numbers in the nesting season, when as may be observed with many gregarious creatures, strength of members appears to lessen their fear of man. This applies more especially to certain sea-birds which nest in large colonies on lonely islands and rocks. The thousands of Gannets which make their nests on the celebrated Bass Rock on the east of Scotland are so fearless in the nesting time that a camera may be placed among their nests, and the birds photographed almost as easily as domestic fowls. Except for this class of bird the method of procedure is rather that of the trapper than the stalker.

In the height of the nesting season the bird photographer should have many nests under constant observation, and much of his success will depend on his choice of the best time to operate. One important point he should never forget,—to so conduct his operations as to cause the least possible distress to the birds.

With all species the young of which remain in the nest until old enough to fly, the best time to obtain interesting photographs is after hatching takes place, and when the young are being fed, and attended by their parents. Plovers, sandpipers, and other birds whose young leave the nest almost directly they are hatched, give better opportunities to the photographer when the eggs are in an advanced state of incubation. At this time the influence of parental instinct is stronger than when the eggs are first laid, and the birds are not so easily alarmed by an obstacle placed near their nests.

But even so it is not wise to attempt photography without careful and somewhat lengthy preparation. We will presume that we are dealing with a member of the last mentioned family of birds,—a Plover or Sandpiper of some species. As these birds nest on the ground and generally in a bare open place with nothing to stop the light, the photographic difficulties are not great, but being very timid wary birds, preparations must be made with the greatest caution.

When incubation has lasted some time, a start may be made by placing one or two small branches on the ground about ten or twelve feet from the nest, that side being chosen which will give correct lighting for the camera. The next day the

bird will have become accustomed to the addition to her environment, and the branches may be moved closer to the nest,—to the spot in fact where the camera is ultimately to be placed. Allow another day and then add more branches; if the bird is very timid and shows any alarm, the addition to the heap of branches should be gradual, extending over several days,—but with most birds it is quite safe on the second or third day to build up the screen or blind of branches as large as is necessary to cover the camera, or even oneself with the camera. In another day the bird will have got quite used to the obstacle and photographic operations may be commenced.

Two methods are possible—in the first of these, the camera is concealed among the branches near the nest, focusing adjusted, a plate inserted, and the shutter set. The operator then retires to a convenient distant hiding place and watches for the bird to return to the nest; the shutter is released either by means of a suitable length of rubber tubing, by string attached to the lever of the shutter, or by an electric release. Personally I do not advise this method except when conditions make it absolutely impossible to adopt the second method, namely, to hide with the camera. It is not a difficult matter to construct the blind or screen of branches in the form of a bower large enough to contain a man and a camera; or a small tent may be put in place of the branches and the latter fixed around it to hide the fabric and break up the formal appearance of the tent. Working with very timid, wary birds it is necessary to completely cover the tent with branches, dry grass, etc., but with a great many birds such as the Thrush family, Finches, and Warblers, the tent may be used quite bare, or with one or two small branches placed around it. A hole will be needed in the side of the tent for the lens to project through, and two or three small slits through which the birds may be watched. Working in this way a very close observation can be kept of the movements of the birds, and a great deal of interesting information gained with regard to their methods of feeding the young, cleaning the nest, etc.

The objection to making exposures from a distance are, that the movements of the bird are imperfectly seen, for although it may be possible to see when the bird is on or near the nest, it is impossible to be certain as to the attitude recorded, or even

that the bird is not moving when the exposure is made; and worse still, after each exposure it is necessary to reveal oneself to change plates; this gives fresh alarm to the bird and prolongs the work to no good purpose.

Working in a tent with the camera, perfect observation can be made of the movement of the birds, and a selection of interesting attitudes for figuring is comparatively easy; plates can be changed without alarming the birds, speed or shutter altered, and even a change of lenses can also be made if desirable—I frequently make a certain number of exposures, and then change my camera for a stereoscopic one, without causing the birds to lessen the frequency of their visits to the nests with food for their brood.

I have many series of photographs recording in sequence the course of events which take place at a nest, when a bird, or pair of birds are tending their young, which would have been quite impossible to secure had I been making my exposures from a distance. I should have liked to have illustrated this article with one of these series of photographs, but the number of prints necessary would have occupied too much space.

With regard to photographic apparatus the camera should be strongly made, with bellows capable of long extension to allow of the use of a long focus lens. The latter should be good, working at large aperture, and convertible, as the advantage of being able to obtain a larger image by using a single combination of the lens is often of great value. The camera stand must be very rigid and strong, the joints of the legs should all telescope, as folding legs are a great nuisance in the narrow confines of a small tent. My own tripod was made to my design and I can fix it at any height from two feet to six feet six inches high without folding or spreading legs. The top should be fitted with a tilting table.



THE DOCK.

J. F. Wilde.



P. H. EMERSON, Esq.

*Author of "Naturalistic Photography," and Pioneer in
Modern Pictorial Photography.*

HINTS ON PORTRAITURE.

COMPILED BY J. W. LITTLE.

LINES AND SPACING.



WITHOUT further preamble, I desire to explain that while many of the suggestions below are the result of personal experience, the greater part of them are from the experience of others and have been drawn from numerous sources of which I hereby make a general acknowledgment. The preparation of this compilation, however unsatisfactory or incomplete it may be, has involved a considerable amount of labor and I offer it to the readers of *THE AMERICAN ANNUAL OF PHOTOGRAPHY* in the hope that it may at least be found useful for occasional reference, even though many of the suggestions contained therein may not be unanimously accepted as good practice. Reference to photographing groups, genre subjects, and to the general subject of composition, has necessarily been omitted for lack of space.

The lines of a portrait should usually lead toward the face; they should also agree in sentiment with the character of the sitter; that is, they should be soft and flowing, or rugged and pronounced, as the subject may seem to require.

There should be variety and curves in all the lines of the figure. The arms should not hang loosely and slovenly but should be arranged naturally and show opposition to the lines of the body and accessories. In standing portraits of women, the arms should usually be so placed as to show full curvature of the waist.

Shallow festoons, and arrangements following their lines, produce a light, cheerful effect, while deeply drooping festoons and constructions upon their lines, give a heavy and solemn effect. From this may be derived a hint as to the best methods of posing and the character of the accessories suitable for various classes of subjects.

Angles have a separating effect; hence angles entering deeply into a figure or group should often be avoided or toned down,

or they may be obscured by drapery, etc. In other parts of the portrait pronounced or awkward angles may often be obscured by other means, as by a background which produces little contrast.

Right angles should usually be avoided in drapery and accessories but may be admitted in architectural features. For this reason clothing of pronounced pattern, as large plaids or checks, is difficult to arrange satisfactorily.

The general arrangement of the drapery, like the pose, is often best waited for, rather than by the operator attempting to effect it.

The outlines of the figure should not be everywhere visible, but portions of it should blend into the background and shadows. Nothing should be allowed, however, to abruptly cut off any portion of it so as to make it appear too thin or as severed from the body.

A portrait should show connection with the sides of the picture, either positively or suggestively; that is, the mass of the figure or some portion of it should touch the sides or stretch in that direction, or it may be joined to the sides in some manner by the accessories. Where this is accomplished by a horizontal line extending across the portrait the line should appear to be continuous and join with the figure at directly opposite sides, although it may run diagonally. The joining of the figure with the sides may also often be satisfied by the use of shadows or by a suitable background; the effect may even be produced by gradation in the background.

The spaces intervening between the portrait and the edges of the print should not be uniform or consist of rectangular or triangular outlines, but should be broken up into irregular spaces either by the pose of the figure or by the accessories.

In getting a good line in the head and shoulders, where space will permit and the lighting is under control, it is often better to travel around the sitter rather than to attempt to attain the result by having the sitter turn his head; or the sitter himself may be asked to move to various parts of the room.

When the head and body face the camera, the suggestion is of rest and repose. When turned in a different direction from the body, there is a suggestion of movement and animation; usually this is the more satisfactory.

BALANCE: SYMMETRY.

If a figure is required for the middle of a panel, and the body is turned to one side, the head may be turned to the other to give balance and symmetry.

A three-quarter view of the head is sometimes preferable to a profile in a decorative picture.

In a bust portrait, the head may sometimes be inclined forward somewhat, to diminish the contrast between the size of the head and the bust, but a lens of short focus should not be used or distortion will result.

Stout people are usually best posed more or less in profile, both for head and shoulders. A seven-eighths full face is usually satisfactory but a three-quarter face is apt to look baggy. They should usually be taken sitting, with but little of the figure showing and outlines subdued as much as possible by any means which may be expedient.

A fat face should be placed close to the light, in order to get strong shadows. A thin face should be placed farther from the light to secure roundness, the lighting should also be broader.

Trimming close to a bust tends to make the person look larger by contrast of lines.

In taking full length portraits of men, the weight of the body should usually not rest equally on both feet.

Old men should usually be seated; young men may be standing.

Old age generally requires a more vigorous lighting than youth; that is, the lighting should be more contrasty.

Old people generally look better against dark backgrounds; young people against light backgrounds.

Give full exposure for old people and develop for softness.

CHILD PORTRAITURE.

In child portraiture, the operator should keep his own head on a level with the camera so that the child, which is usually inclined to look toward the operator, will not lift the eyes too high.

When children are taken standing, be careful that the lower edge of the background or the baseboard of the wall does not



R. DÜHRKOOP.

come exactly on a level with the lower line of the dress, which is likely to occur with short dresses.

It is hard to pose children in any special position and it is therefore usually better to allow them to assume natural poses for themselves and await a favorable opportunity before releasing the shutter.

In a well lighted studio, instantaneous photographs of children may be taken by using rapid plates, a lens working at large aperture, and a focal plane shutter.

Puppies, parrots, kittens, soap bubbles, toys, etc., are useful in attracting the attention of young children and diverting them from the fact of their being photographed.

A very young child, to avoid the necessity of holding it, may often be more easily photographed at home than in a studio, where the surroundings are strange to it. At home it may be propped up in its pillow or crib and more easily controlled, although the lighting may not be so good.

As the element of mystery, so often useful in other compositions, is of little use in pictures of children, they may well be taken in a strongly lighted or open air studio.

To avoid frightening children, the camera may often be concealed from them or even located outside the studio proper.

Young people, or those without pronounced character, should not be too sharply focused, but the focus should be rendered soft.

When small children are photographed at home, it is often better to place the camera directly in the window in order to get broad lighting and so lessen the exposure. The blind, if light colored, may also be raised overhead and extended horizontally into the room and used as a reflector. Older persons with pronounced features which cannot be well lighted may often be treated in this way with advantage also. The lighting by this method is of course necessarily flat but may be controlled somewhat by the use of light and dark screens. Generally speaking, this method of lighting is not recommended except in cases of emergency, as where the light is poor, the lens slow and necessarily of short focus to get the subject sufficiently near the window.

When photographing children outdoors, orthochromatic plates, and if possible a light ray filter, should be used to get better flesh rendering.



R. DÜHRKOOP.

FIGURE PORTRAITS.

Tall people may be made to appear shorter by giving more space above the head. Short people may have the head nearer to the top of the print if it is desired to conceal their shortness of stature.

It has been recommended that an effective way of treating a short lady standing is to use a polished wood floor the reflections upon which produce an elongation of the vertical lines of the figure; that the effect of polished wood can be produced by having the floor covered with linoleum and wetting it previous to the exposure. This might be useful but is hardly always expedient.

If the dress is long enough, a short subject may stand on a block of wood or a book an inch or more in thickness to increase her height somewhat. Another way is to place beside her a low chair, which will increase her apparent height by comparison.

Correct drawing cannot be obtained under six feet distance between the subject and the camera and this distance should be considerably greater if possible, particularly for large faces, to prevent distortion. Full figures in rooms look better if they can be placed at a distance of not less than fifteen feet, to give better perspective.

In raising or lowering the camera in taking full figures, due regard should be had to the effect on perspective; that is, producing a low or high horizon or vanishing point.

The legs of men in a standing position are often better left out. Three-quarter views of men standing are also difficult.

In a seated figure the lines of the arms should not follow too closely the lines of the arms of the chair.

EXPRESSION.

Never have bald heads face the camera squarely or look downward.

It has been recommended to use a blue ray screen over the lens when photographing a brunette dressed in white.

A dark person should usually have a stronger lighting than a person of light complexion.

Brunettes usually look better in broad lighting; blondes in white may look better in shadow lighting.



Chas. C. Kough.



R. DÜHRKOP.

The hair and face should harmonize in the photograph ; that is, a blonde face should not appear to have dark hair nor a brunette face to have light hair. This calls for discrimination in lighting and in the use of light screens, and in many cases the use of orthochromatic plates and ray filters.

For colored people, use a very dark background.

If a fair person be placed in a strong light, the contrasts between the lighted and shadow sides of the face are increased. For the same reason the background should not be too dark.

It is difficult to get strength in the eyes of a fair person in full face position. Blue eyes should be in shadow if non-orthochromatic plates are used.

The eyes should be directed in the general direction toward which the head is turned ; that is, the direction of the gaze should be natural and not contrariwise. Up-turned eyes give a stupid expression.

The eyes should not ordinarily look directly at the camera, even in full face position, but the subject should always have some object back of the camera upon which to fix the eyes, to prevent staring.

A good eye rest consists of a large portrait so arranged that it may be moved to any position. The print should not be one of fine detail, but rather one which can be well made out at a distance.

Prominent eyes should be turned away from the camera. Deep set eyes require diffused lighting.

Small eyes may look upward somewhat or the chin may be depressed, leaving the gaze horizontal ; large eyes, contrarily.

If the eyes look downward, some claim that the hands should be included in the portrait.

If one eyebrow is higher than the other, it may be turned away from the camera so that its greater height will not be emphasized.

If one eye is larger than the other, usually take the larger eye, to give better perspective. If the lens is of short focus, however, the reverse should be done if the exposure is made at close range.

If the exposure be long enough, the subject may blink the eyes, to avoid a strained expression.

Where there is puffiness in the eye, or a double chin, rub on

a little yellow powder with chamois skin. This may also be used effectively on a bald head or on white hair mixed with gray.

To get an effect of action, the exposure may be made before the subject is fully posed. The operator may use a long tube and keep the bulb in the hand behind the back and out of sight. If a three-quarter or other view is wanted he may move himself to the desired position and have the subject look toward him instead of toward the wall.

In lighting the face care must be exercised about pointing the camera upward or downward, that is, having it too high or too low, as it will make a great difference in the modeling.

A high forehead may be lowered by depressing the head and so having more of the hair show. Should the subject have an upturned nose, the camera may either be raised or the head depressed.

If the camera is too high and the subject close by, the head will appear disproportionately large, the neck short, and the shoulders raised, and the subject will have the appearance of falling forward in the portrait; if too low, the head will appear too small and as if receding.

On account of the nearer position of the camera, a large head will require a longer exposure than a full length portrait.

Place the camera rather high when it is desired to avoid emphasizing the nostrils. Persons with snub noses should not have the head directed upward, while those with long noses should not have the head directed downward. A drooping nose should be taken with the head slightly thrown back.

By skilful lighting, irregular or crooked noses may be straightened in the portrait. They should usually be in shadow. A crooked nose is more noticeable on a full face portrait; its curvature should be turned toward rather than away from the lens if taken three-quarters.

A broad nose should not be taken full face nor a hooked nose in profile. A round or flat nose should usually be taken in profile or three-quarters, as may seem best. A bridge or bony nose should be taken three-quarter and in shadow.

A strong shadow on the face cast by the nose suggests a large nose; absence of shadow tends to soften the nose.

Avoid top lighting with an aquiline nose.

The shadow cast by the nose should never quite meet the shadow on the shaded side of the face. Some light should be reflected by the cheek to throw light on the shaded side of the face.

A wide mouth should not be taken full face. If the lips turn down, the poise of the head should not be such as to exaggerate them. A projecting chin or a protruding lip should not be taken in profile.

Side face poses are best when dealing with people with large mouths, prominent ears, eyes of different sizes or eyebrows of different levels. Full face poses are best in cases of small mouths, receding foreheads, and occasionally of badly proportioned noses.

People who do not close the mouth should be allowed to hold the mouth naturally but it should be placed in shadow. When the teeth show, they should also usually be placed in shadow.

Large ears should not be taken full face and the side toward the camera should be in shadow.

A subject much freckled may be put slightly out of focus to minimize retouching.

When the camera is brought close up there is a tendency to narrow the face; when it is farther back the face will look broader.

If head-rests are used, first pose the sitter, then adjust the head-rest to the sitter and not the sitter to the head-rest. If the lens will work at large aperture and the light is good, it is better to avoid the use of head-rests altogether.

Sharp elbow angles are difficult to pose satisfactorily.

The operator should not move from his position when a settled pose has been determined upon and arranged and he is ready to make the exposure, as this may disturb the subject.

In profiles a little more space may be left in front of the face in focusing or in trimming.

Profiles do not give as characteristic a likeness unless the face is dominated by the nose or the chin rather than by the eyes and mouth.

A stooping figure should not have the body taken in profile.

Full face portraits tend to show up any serious lack of symmetry in the features.



EDWARD BERGE.

Mrs. Jeanne E. Bennett.



R. DÜHRKOOP.

The swing back may be used to get the knees in focus without using a smaller stop, provided the subject is not too close to the camera. The side swing may be used to get the near shoulder in focus in large figure studies.

If the subject is too self-conscious, it is often a good rule for the operator to make a pretended exposure, when the subject will probably relax and the shutter may be released. Always try to engage the sitter in some subject in which he is interested, so that he may forget himself. His characteristic poses and gestures may be best observed before he is placed in front of the camera.

ACCESSORIES.

Pliant things, such as chiffon, lace, furs, etc., lend themselves more readily to grace of outline than do silk and satin, while dull cloth is more conducive to breadth.

Care must be taken in arranging the accessories, such for instance as a newspaper or book held in the hand, that the attention may not be drawn away from the head. Balance may often be secured by the introduction of a strong light by the use of some accessory or otherwise, to serve as a background for the head, the secondary light being toned down and so concentrating the interest in the head and face. There should be but one leading light which should usually be the head and one leading line which should lead toward the head; a study of inverted photographs is useful for the purpose of determining the abstract quality of lines and spaces.

The accessories should be employed to repeat the lights. The light of the face should be several times repeated throughout the picture in fainter tones, but there should be no exact equality in any of the repetitions, neither should there be too many, but the chief mass of white should be sufficiently pronounced and have no rival.

Be careful to have the background and accessories suited to the character of the sitter and his costume. Models should also fit their occupation; as for instance a tennis girl should be well formed physically.

Jewelry should usually not be worn unless it be of a character that will photograph well and not reflect the lights strongly. Should it do so it should be remedied in retouching.

HANDS.

As a general rule, the hands should not be placed directly below the head, although one of the hands might be so placed if the other carried the greater interest, as might be the case were it holding a book, etc., and the lines running toward it from the head were stronger.

The hands should not be placed opposite each other, nor, when considered with the head, form a triangle or other geometrical outline. Sometimes it is better to subordinate them in tone; to that end they may be placed in shadow and should usually show the edges only. The fingers should be partly folded but should rest naturally.

If the hands are placed close together, they are likely to be too insistent unless skilfully posed and subdued in lighting.

The background for the hands should be carefully considered. If the hand touches the face it should not press so hard as to cause distortion of the features. In this case the hand and the side of the face with which it comes in contact may be placed in shadow.

First allow the sitter to drop his hands in his own way, as the result will probably be more natural. If unsatisfactory, they may then be posed or omitted.

Poses of the hands adopted in painting cannot always be followed in photography, on account of the exaggerated perspective produced by the lens and for other reasons.

It is not advisable to use the swingback to get the hands in focus as it further increase the size of the hands. It should be remembered here that the length of the hand from the wrist is about the same as from the forehead to the chin.

LIGHTING.

In order to preserve tonal values and still concentrate the light on the face, it is better to do so by placing the face in strong light than to darken the tone of the hands artificially.

A vertical light is best for a round face to give relief. A front horizontal light is best for heavy eyebrows, sunken eyes, and prominent features. A top light gives better character to the eyes but is apt to exaggerate the mouth. Where there is little projection to the brows, a top light may often be used to advantage.

If the arrangement of the blinds to secure proper lighting be once ascertained, almost any effect can be secured by moving the sitter and by the use of head screens, without moving the blinds.

Some operators consider that the best effect of lighting is secured when the catch lights fall on the eyes properly, securing the different effects, such as broad lighting, Rembrandt lighting, etc., by moving the camera around the sitter. For most lightings, the subject should look forward with the face about parallel to and slightly back of the side light, with the light falling upon the head at an angle of about sixty-five degrees.

For diffusion of lighting, some operators use a large screen composed of tracing cloth, which is interposed between the skylight and the sitter in such a manner as to shut out all direct illumination excepting that which is permitted to pass through an aperture about two feet square in the center of the screen. Others use an open light, corrected by opaque screens between the subject and the light, to produce luminous shadows in the subject and at the same time allow of short exposure.

If the lighting is harsh, lengthen the exposure and shorten development; if flat, shorten the exposure and lengthen the development.

Softness may be produced by removing the subject from the light and allowing a large area of light to enter.

More brilliant lighting can always be obtained on bright days than on dull days, as the light is more diffused, and faster plates must be used in dull weather, which do not give as much latitude as slower plates. If slow plates are used it is often necessary to diffuse the light on bright days to soften contrasts.

When orthochromatic plates are used, the light on the sitter should be screened by pale yellow blinds when it may not be necessary to use a ray screen over the lens. If panchromatic plates are used such blinds will not be necessary.

If there is no blue or violet in the subject, it is of no advantage to use a ray filter in connection with orthochromatic plates and they may be used without it; or the light falling upon the blue may be shielded by an opaque screen.

The use of ray filters in connection with orthochromatic plates tends to increase contrasts of light and shade. The lighting then should therefore be somewhat more diffused.



R. DÜHRKOOP.

Orthochromatic plates are not always desirable in portraiture, as in the case of contrasting blue and white stripes, which might be rendered too contrasty. The use of orthochromatic plates, however, tends to minimize the necessity for retouching. Flat lighting on the shadow side of the face is more suggestive of youth; more contrast is suggestive of age and character.

Thin faces should have diffused lighting, which tends to make them look more full, while hard lighting tends to give more expression to round faces.

High lights upon or surrounded by light tones give suavity and gentleness of modeling. In a face this lighting produces flatness, and is therefore adapted to faces which are wrinkled and thin, where these qualities are apt to appear too pronounced.

High lights against deep shadows give brilliancy and produce ruggedness and angularity. This is a good lighting for faces inclined toward flatness or having little elevation of the features, and tends to bring out expression.

A flatter lighting is required for a profile than for a three-quarter or full face.

The more at right angles the light, sitter, and camera are placed with respect to each other, the longer the exposure required, on account of the greater portion of shadow showing in the portrait.

Reflectors are useful for lighting up shadows cast on backgrounds or other portions of the picture. A note should always be taken as to what extent the reflector throws light on the background as well as on the sitter.

REFLECTORS.

To avoid giving a harsh light, the reflector should be large and at some distance away. When used for the head and shoulders only it should be small, close to the subject and just out of range of the lens.

A pure white reflector is apt to cast too strong a reflection on the shadow side of the face, producing second catch lights in the eyes.

A reflector on the floor will reduce shadows under the chin and nose.

When a white screen is used between the subject and the light for diffusing the light, the exposure may be somewhat less.

When using a white side screen for diffusing it is sometimes useful to have one or two very small dark screens to cut off the light from the shoulder or from the hands in case they should be posed against a dark ground.

In general, the principles governing the lighting and posing of a portrait in the studio will also apply to portraiture by an ordinary window, although, the source of light being smaller and less under control, it is more difficult and effects cannot be obtained in such variety.

Owing to the concentrated lighting when using an ordinary window, the scale from light to dark in the composition should be short; the subject should be as well lighted as possible, the light diffused, the shadows illuminated by reflectors and the exposure ample.

A sheet of white cardboard may often be placed outside the window at an angle to secure better lighting where the light is obstructed by high walls or other objects.

A shaded window at a considerable distance on the opposite side of the room may often be utilized to light the shadow side of the face, but the light from it should not be so strong as to produce flatness or cross lighting.

If the walls of the room are too light, or the light from other windows in the room is strong and difficult to control, a dark reflector may be used to tone down the light on the shadow side of the face.

If daylight is insufficient in at-home portraiture, the side opposite the source of light may be sometimes lighted by a small supplementary flashlight, using plain magnesium.

By seating the subject low, as with children, he may be placed farther from the window; the farther from the window, the more diffused will be the lighting.

A good lighting may be secured by an ordinary window by placing the subject the same distance from the window as the width of the window and even with its farthest edge. Cover the lower part of the window with a dark shade and raise it to the same height as the head of the subject; then turn the head of the subject until the eye in shadow can just see the window.

When the dress is dark, the lower part of the window should

be covered with some translucent material, in order that the dress may receive sufficient exposure.

Violent contrasts in clothing, accessories, or color should be avoided or controlled in lighting. A large mass of dark or light, such as a black or white dress, must be partly lost in the shadow or in the background in places, or it must be relieved in some other way as by a strong effect of contrast. White objects should usually show relief on one side and on the other unite with the shadow or background to prevent their appearing to be inlaid.

Figures in silk and satin dresses should be so lighted that the face only is in strong light, to prevent spottiness by reflections.

When photographing a subject in a white dress, compromise between over- and under-exposure of the face. Ribbons, etc., may be retouched a little and the face held back while printing. Woolens and colors which absorb the light require more exposure.

If white drapery must be used, it is better to have it of wool, which absorbs the light better than cotton. Non-halation plates are best. A painter's comb, having about twelve teeth to the inch, placed in front of the upper half of the lens, if properly used, will serve to partially cut off the light falling on the lower part of the figure.

When it is intended to vignette portraits, the sitter should not wear clothing of marked contrasts or patterns; white drapery is perhaps best. The background should be light and plain or somewhat graduated; the light should come rather from the front, the focus should not be too sharp and the eyes of the sitter should not be looking directly toward the camera; exposure and development should be so controlled that the face will not appear in the print as very much darker or lighter than the background.

Black vignettes may be obtained by placing a vignetter inside the camera and about two inches from the ground glass.

Vignetted photographs are not particularly in good taste as they prevent proper spacing and uniting of the subject with the margins of the picture and moreover are apt to convey the impression that they have been printed in that way to conceal defects which would otherwise appear.



Mrs. E. P. Cabot.

BACKGROUNDS.

When a light background is used the lighting should be flat and a lighter range of tones should be employed on the face than with a dark background, when the general lighting should have more contrast.



R. DÜHRKOOP.

When using a painted background, the light should fall from the same source as the shadows indicate as painted on the background.

Where strong contrasts are desirable, it is usually better to put a light figure against a dark background than a dark figure against a light background.

A dark background generally gives more importance to the head than does a light background. Dark clothes are less noticeable against a dark background and light clothes against a light background.

The figure should usually not show too hard against the background but should merge into it at some parts to produce one scheme of light and shade.

The background should never show a greater degree of light and shade than does the principal part of the picture.

When it is desired to subdue the background and accessories, negatives may be given a short exposure and shadows strengthened with matt varnish on the back, while detail may be strengthened by retouching on the film side and the portrait printed on rough paper to soften the lines of the retouching. Undesirable portions of the background may be eliminated by reduction; various other modifications may be made also by reduction and spotting, as practised in some studios.

The light and shade values of either plain light or dark backgrounds may be variously modified by setting them at different angles, either laterally or horizontally, with respect to the source of light. This may also be done by reflecting light on various parts of the background or by screening parts of it from the light.

When graded backgrounds are used, care should be exercised that undue prominence is not given to those parts of the subject coming against the lighter parts of the background. Some operators are opposed to the use of artificial and graduated backgrounds and use various plain fabrics in their stead. Brown and gray paper often make very serviceable backgrounds.

The distance of the background from the sitter should be studied with the lighting. Atmosphere is more easily secured with a gray background.

A full length portrait should have plenty of background space.

For a good likeness, a light background is preferable; for a study dark background is usually best.

With a white background, a longer exposure is usually required to avoid contrasts. With a dark background the exposure should generally be shorter as the lights of the face are



R. DÜHRKOOP.

then shown with greater clearness. Development in either case should not be prolonged.

If a background has creases in it, it may be kept moving during the exposure.

A simple background may be improvised by the use of the open doorway of a darkened room, or the door itself, by a suitable choice of angle, may sometimes be made to act as a graduated background.

When taking a portrait outdoors it is often better not to attempt to pose the subject but to await a favorable opportunity and then snap the shutter.

When a bust picture is taken outdoors it is sometimes better to have the subject standing.

The same attention should be given to the lighting of a face outdoors as indoors. This condition may usually be met by a suitable choice of location.

OUTDOOR WORK.

An outdoor portrait should convey the feeling that it was taken outdoors. The subjects should usually be in loose, comfortable costumes. Rustic seats may be used, but do not use chairs or other paraphernalia belonging to the house. The subject and the surroundings should not be incongruous.

The background in outdoor portraiture should be fairly well in focus, but it should be sufficiently diffused to produce a feeling of atmosphere behind the subject. If it is necessary to use a very undesirable background it should be entirely out of focus, but not so much as to cause distraction.

Be sure that the background is not too elaborate, unless it is intended that it shall be a pictorial photograph, in which event the figures should be small and subordinated to the former. The sky, unless subdued, should not show close to the figures, and the background should not admit spots of light.

A too strong light, even indoors, contracts the pupils as well as the eyelids; therefore, when taking portraits outdoors and in strong light, be careful to see that the light does not strain the eyes of the subject. The eyes should rest on some dark object to avoid squinting, particularly if they be of light color. If the sun is shining it is better that it should be at the back of the subject and facing the camera, although it should of course not



THE MINIATURE.

Curtis Bell.



JANE REECE.

fall directly on the subject and the head should not come directly against the sky.

A position near a large tree is often a good one in outdoor portraiture, the trunk of the tree shutting off the light from one side and the branches softening the light from above. The corner of two walls joining at right angles and in shade is often available as a good position, but an artificial background generally must be used. If the light is too strong from above, it should be softened by a piece of muslin suspended over the sitter.

The exposure outdoors will be governed by conditions, but it will usually be about three times that required for a landscape under similar conditions. If there are buildings near, shutting off much of the light, the exposure required may be greater.

A studio stand may be improvised by making a collapsible triangle of laths, fitting it with bed rollers and using it as a base for a tripod by inserting the legs in holes on the upper side and at the corners of the triangle.

MISCELLANY.

An anastigmat thrown out of focus does not give as agreeable definition as a cheaper lens (unless it is equipped with a diffusing device) because of the extreme contrast between the portions in and out of focus.

The lens should be racked out when it is desired to produce diffusion in portraiture. The focus should never be so soft as to destroy textures.

A lens of rather long focus is best and it should be fitted with lens shade whether indoors or out.

The focus should usually be sharpest in the lightest parts of the portrait, which is most often the head; this may often be accomplished by a judicious use of the swing back and a lens of large aperture.

Cap exposures may be made where there is necessity for silent shutter and it is not available.

Do not attempt to represent outdoor effects in the studio. If the figures are in outdoor costume, an imitation stone wall or fence may sometimes be necessary. In general, however, artificial gates, fences, balustrades, etc., should be avoided.

The environment of the sitter in the operating room should be light and cheerful. The furniture should not be obtrusive and the upholstery should be plain, not patterned. The walls should be of light gray; the floor may be laid with matting or a simple carpet pattern, though these are often a disadvantage when moving the position of the camera and furniture.

Furniture of old and rustic patterns looks artistic in the reception room. The room should be well furnished and decorated. Some professionals prefer that the pictures hung in the studio should consist of engravings or platinum prints of the old masters, choosing for this purpose pictures which are not so well known as to be lacking in interest, and occasionally hanging with them some of the photographer's own best productions. Old armor, vases, etc., may also be used to decorate the studio and are likely to elicit interest on the part of patrons. The walls should be of some quiet color.

The show window should be kept attractive and the samples of work displayed should be changed often so that the public will be constantly on the lookout for something new. Where high class work is done, only a few selected pictures should be displayed; where the work is of a cheaper grade the pictures displayed should be more numerous and of greater variety.

The inside covering of packages of photographs for mailing look better sealed with a label of artistic design than tied with twine.


A proof should seldom be sent to a customer from a wholly unretouched negative, as it is likely to make a bad impression.

It is better to have the name of the studio on the back of mounts, but if on the face it should be small, of artistic lettering, and of a color to harmonize with the print.

It is usually better to yield to a client's wishes and make one negative in the position or with the accessories desired by him and then make another in accordance with your own judgment. It is more likely that he will choose the latter when the proofs are sent him, or he may even increase his order by ordering prints from both.

THE CAMERA IN NATURAL HISTORY RESEARCH.

By W. J. FARTHING.

HOSE dear old days of the past! Do I not well remember in the '60's, running the wet collodion plates through the silver bath, packing them with wet sponge and wadding into equally wet, and, be it added, somewhat dirty, dark slides? Then their solemn investiture in a piece of an old macintosh, and that frantic rush over the moor, knee deep in heather, to secure a record of the Wimbrel's eggs in situ, or that odd shaped wasp's nest of the early autumn. Back at top speed into the darkroom to develop, before the plates were spoilt by the cockle shell markings which would come as the collodion film dried! How many failures, but what triumph in a partial success—now and again. Then came the Halcyon days of the dry plate, the homemade ones I mean, with glorious uncertainty as to the speed of your emulsion. Oh, those were happy times. Boy as I was, the charm of it all has lasted through the years, and I trust will never fade now until the inevitable shutter falls on the last plate in life's camera obscura. The buoyant breath of Nature in the open is verily worth a king's ransom, for it keeps thought clean, and the spirit fresh, with her own innate purity. I would remind my readers that in every case it is "the man behind the gun," who does the work, and that to attain success he must be essentially a specialist. No matter what branch of natural science we take up we must devote our energies steadily, consistently and above all accurately, to that particular branch alone, and leave the rest to the other fellow. There is ample room for all, more than enough, and to degenerate into a jack-of-all-trades spells failure, without a chance of scientific redemption. I lay all stress on accuracy, and an instance which came under notice the other day shows how necessary it is to cultivate this faculty. One of the papers published, with a great flourish of trumpets, a photograph of a Marconi Station taken at night,

showing certain curved bright lines in the Heavens which purported to be the actual Marconi messages caught on the wing. Alas for the pretty little romance, the plate had been given half an hour's exposure on a starlit night, and the so-called Marconi waves were but star-trails. Let us each then follow his own taste in the selection of his subject. The bird lover, the botanist or mycologist, the lepidopterist, or the beetle man, each stick to that particular page in the great book of nature which he loves, and success is not only certain, but results will be valuable to a degree we seldom realize. It is manifestly impossible, within the limit of these few lines, to do more than just touch here and there on the fringe of such complex possibilities as the "black art" opens out to the scientific seeker after truth. Astronomer, analyst, metallurgist, naturalist, or explorer, all owe not only the permanent record of results, but in some instances results themselves, largely to the wonderful adaptability of the haloid salts of silver to varying conditions; whilst the use of photography in book illustration has cheapened our literature, and also, alas, rung the knell of wood block cutting and steel engraving, and is killing lithography by inches.

The first consideration, in the field, is of course the camera and its accessories, and here requirements must be left largely to personal consideration and the particular branch of research selected. A 4 x 5 or at most a half plate is quite big enough in view of enlarging possibilities.

In my practice I never dream of giving a short exposure where I can give a long one, my general rule being to expose for the shadows and leave the high lights to tentative development afterwards. In this view of possibilities I find ortol with its freedom from stain perhaps my favorite developer, though old "pyro" and the newer amidol and metol have each their good points. Here is where the advantage of using ten per cent. solutions of everything comes in. When once you know by experience what are the capabilities of the particular emulsion on the plate or film you are working, its little peculiarities, its elasticity of resolution (to coin a phrase) and its sensitiveness to temperature, you have a power in your hands, under a ten per cent. formula, which, compared with "Tank and Time" development, is as the delicately graded

wave-note from the violin of the master to that of the street piano, with its handle at the end! There is no comparison between such results, there cannot be! In any case be sure of one thing—if you use plates have them all backed. The advantage in delicacy of definition is well worth the trouble or expense, and no serious worker thinks of using anything else nowadays.

Where much of success or failure comes, in practical work, is in the choice of the lens, and we are glad to note how well modern methods, workmanship, and materials are now serving us, at a figure never dreamt of a few years ago. In those days the cost of a lens depended upon its focal length, and so the camera maker used to supply that which would just cover the size of plate the camera was built for. The result was that as 99 per cent. of the purchasers knew rather less about photographic optics than they did about the binomial theorem, they wondered, and some are wondering still, why photographs so produced so often show results in perspective, or rather the want of them, which were absolutely startling. The fact being, as is luckily better understood nowadays, that unless under particular circumstances, the shortest focal length used should never be less than once and a quarter the diagonal measurement of the plate it has to cover, and as often as possible longer than this. For a 4×5 plate this works out at about $7 \frac{13}{16}$ inches, or roughly an eight inch focal length, at the least. Now, when an achromatic combination, working at an equivalent focus of ten inches, on a camera extension of only $5\frac{1}{2}$, can be purchased for about eight to ten dollars, we see what an advantage we gain in this year of grace, 1908. Then we have the host of new aplanats, symmetricals, anastigmats, and all their tribe, to which the new glass and improved optical formula therewith have given birth. An anastigmatic combination, covering well at an open aperture of $f5.8$, on a 4×5 plate, puts a new power into the hands of the practical worker, for the large pencil of light admitted makes very short exposure a certainty, even in the dull days of winter. Thus we realize at once that there is now little excuse for inaccurate delineation of nature, in whatever mood we may take her.

The printing process should of course be a permanent one and here platinotype scores heavily, if only from simplicity



Upper : *Amanitopsis Vaginata*.
Lower : *Stapelia* (Carrion Flower).

Upper : *Amanita Muscaria*.
Lower : *Echinocactus*.

W. J. FARTHING.

combined with its minute definition, when used under a suitable negative. Carbon transfer, too, is quite as permanent, and the choice of color available in the tissue often a great advantage. The Autochrome plate must not be forgotten, and if its permanency may be finally accepted, a somewhat uncertain factor yet, in view of the short practical experience of its keeping properties we have had, should be invaluable, especially to the mycologist in the reproduction of the tinted glories, in their endless variety, of the fungi groups, with which our woods blaze in the autumn.

From the shadow of the forest to the wave tracked zone of a sea swept shore with its lovely groups of snow white *Dianthus*, or tinted *Crassicornis*, its wealth of seaweed and shell, go where you will the charm is ever the same. Children still, as Longfellow said, "clutching vaguely in the firelight, at the gems which dance on the old nurse's ample bosom,"—to my mind, nothing aids us quite as photography is doing to rise from childhood to strength.

"Nourishing a youth sublime,

With the fairy tales of science and the long results of time."



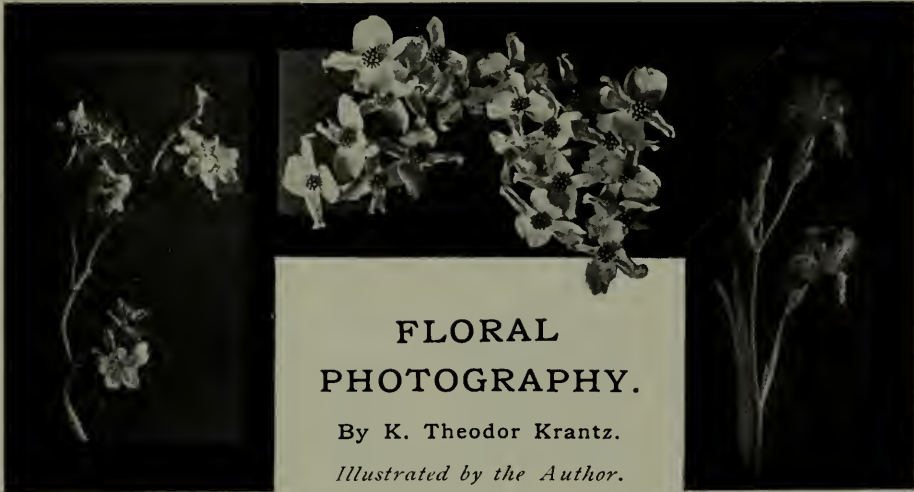
STANHOPEA (Orchid), Madeira, 1901.

W. J. FARTHING.



HOMeward BOUND.

William T. Knox.



IT has long been my opinion that the average amateur is willing enough to experiment along new lines, provided no especially expensive or complex apparatus is required. By following the lines described in this article, the delightful branch of photographing flowers may be taken up, with practically no extra expense for apparatus, as the method of lighting, etc., is of the simplest.

For the amateur whose time is limited, or who does not care for the long tramps in search of the picturesque landscape, I would certainly recommend floral photography as an excellent opportunity for keeping up his interest, and once taken up, the new possibilities which present themselves will insure a continued interest in the work.

One need never lack for subjects, especially those fortunate enough to live in the country, where all outdoors has been lavishly adorned by Nature's floral gifts. It will be found that the most satisfactory compositions can frequently be made from the simpler flowers. The writer has been rather fortunate in having a large garden to draw from, but has inclined more and more to the wild flowers and fruit blossoms which are scattered in such profusion all over the countryside.

In general it has been more satisfactory to me to photograph the flowers without showing the vessel containing same, and hence I use a small vase for holding fruit branches, flowering shrubs, etc., and a few small necked bottles weighted with sand to support long stemmed flowers. Of course with flowers having short stems, such as sweet peas or pansies, it is necessary to either show them in a vase or scattered on the surface of a table.

For backgrounds I use two large sheets of cardboard, one of black on one side and dark gray on the other, the other light gray and white. This gives me all the shades required, and by bending the background away from the source of light, nicely graded effects may be obtained. The background should be placed far enough from the subject so that no cast shadows appear. For lighting I have a bay window facing north, and by raising or lowering the several shades can get the light from any direction I desire. The same effect could be obtained from any room having two adjacent windows.

When the light is strong it is sometimes necessary to use a reflector. I use a white sheet hung over a high backed chair. The apparatus is extremely simple and may be set up or removed in a few minutes. The background generally either rests against the back of a chair, or is pinned against the wall.

In placing the flowers care should be taken to get a good light and shade effect, especially with the light colored blossoms. Look for the shadows, try the light from different windows and note how the shadows vary. Raise and lower the shade and again note what a difference it makes. A side light, a little to the front of the subject is generally best, too much top light tends to diminish the shadow. When the lighting is just right, how beautifully the curvature of each petal is brought out!

This method of lighting will be found satisfactory for fruit blossoms, narcissus, dogwood, etc., for iris and flowers of that kind a light from the rear will be found more satisfactory, and beautiful effects will be obtained, but great care must be taken to get the exposure right in order to preserve the translucent appearance of the delicate petals.

I have found it more satisfactory to use orthochromatic plates in all classes of this work, as even the white flowers have.



IRIS.

K. THEODOR KRANIZ.

their green or yellow centers and the color values of these as well as the green foliage should be preserved.

For yellow flowers or combinations containing blue or purple



PAPER WHITE NARCISSUS.

K. THEODOR KRANTZ.

flowers, I use a light yellow ray screen such as the Ideal, and multiply the standard exposure by four.

For a standard exposure I use fifteen seconds with stop F16, for a bright light with one window. This is between the hours of 9 A. M. and 3 P. M., and for light colored flowers.

For cloudy days this exposure should be doubled, and quadrupled for very cloudy days.

For development I use a tank with the Eastman formula: Sodium carbonate, dess., 90 grains; sodium sulphite, dess., 60 grains; pyro, 30 grains; water, 48 ounces; developed for twenty minutes at 65 deg. Fahr.

It is perhaps hardly necessary to say that pinholes, etc., are to be avoided as much as possible. By taking the following precautions it will be found that they seldom appear. First make sure that the plateholders are free from dust, then load the plate directly from the box without dusting. Before placing the plates in the tank, lay them in the tray and flow a few ounces of developer over the surface; immediately after this brush the surface of the plate with a camel's hair brush or a tuft of cotton, this will remove all dust and bubbles.

For printing I generally use platinum or gaslight paper. In cases where the negatives are inclined to be contrasty, I have found carbon to be the printing medium "par excellence." It preserves all the gradations, and may be obtained in practically any color. For a picture of white flowers with green leaves, a light green carbon print leaves nothing to be desired.

It will be found that flower pictures have great possibilities for decorative compositions, such as cover designs, page headings, calendars, etc. Regarding the composition, it will be found that after a few trials the flowers are easily arranged and it is a simple matter to take away or add a blossom here and there in order to get the desired results.



APPLE BLOSSOMS.

K. THEODOR KRANTZ.

BABIES.

By C. H. CLAUDY.



THE editor wants his contributors to write about the things they know best. My title does not display my knowledge, which is not exceedingly great. What it amounts to, however, is very much at your service, since to spread the cult of the baby record, and to know that some one else, through one's own efforts, is enjoying a pleasure one knows to be unusual, is more pleasure than duty.

If you haven't a baby, get one. If you have one, get a Kodak. If you have both, use them in conjunction. But, Kodak or Graflex, stand or hand camera, big box or little, look not for continual success, nor for such success as more experience will procure you, for verily, I, initiated, instructed, and passed to the thirty-third degree of baby-picture craft, in so far as trials and tribulations can award a diploma or confer a degree, say unto you, that with the possible exception of kittens, there is nothing on earth harder to properly picture than a baby or a small child, nor anything which, pictured, yields greater disappointment in results.

Why this is thus, is thus and so. So we are told in print, orally, by book, by pamphlet, and by correspondence school, not to mention such things as magazines and booklets. Nevertheless, we continue on our uneven way, making one success to ten failures, spoiling temper, plates, and babies, and all to retain, maintain, and sustain our reputations and our baby-record books.

To get down to the everyday practicalities of picture-making and leave to others with better descriptive pens than mine the task of telling the troubles of the baby-taker, let it be said that, so far as outdoor work is concerned, the principal thing is to use common sense as to two things—light and exposure. Sunlight, white dresses and short exposures make a perfectly fierce combination for children, as a general rule, although (a pity) most such efforts are so made. If you want a sunlight pic-



CARRIAGE COMING.

C. H. CLAUDY.

ture, leave off the white dress, in the first place, using brown or gray or blue or checks or anything light, but not white,—use a fast lens and a slow snapshot, so that the negative will have ample exposure.

Then put your film in the tank and develop for the normal or less than normal time, and you will have a result, which while dense enough in its high lights to produce sunlight, is not too dense to show detail in both light and shade. Sunlight, in nature, is the great discoverer of detail—in the average photograph it is represented as blank white paper, dotting grass, trees, houses, babies, or steam engines impartially, and looking just about as much like sunlight as spots of white paint on a parlor floor would so look.

In the second place, don't imagine for an instant that sunlight is an essential. Sunlight and childhood, dancing flowers and moonbeams, and firelight and toys and butterflies are poetical combinations (I am told), but for everyday practical photography, sunlight in its unadulterated form is not only not a necessity but is frequently an undesirable adjunct.

Trees, if they give real shade and not a leopard's hide effect, are excellent things, both for hot weather, mosquitoes, and as outdoor studios. Porches are less so, as the lighting is usually harsh. Best of all, for natural pictures, is the slightly hazy day, when the sun is not at its brightest but filters through the clouds. Here, as before, an ample exposure is wanted, but it may be cut down as contrast may be needed, only beware, as you would the number thirteen, the new moon in the wrong place or a perambulation under a ladder,—beware cutting it down so much that the shadows are inky black. The only inky black shadow outdoors in a bright light is a well or a door,—never a bush or a tree or a side of a face. In just so much as white paper or black shadow appears on your print outdoors, in just so much have you scored a failure, and, if it be a child's picture, a double failure.

Real success with any children's picture outdoors comes with a love for children in general and the individual child in particular; an understanding of what you are trying to picture and an everlasting keeping at it whether you are out of patience or not, and an equal determination to spend films, plates, time, and chemicals, with the child's perversity, until



THE PASSING SHOW.

HELEN W. COOKE.

you get what you want. Patience, patience, patience—unless, of course,—which is quite another story,—the child is old enough to understand and help, when nine out of ten difficulties disappear as by the waving of a magic wand.

Indoors—what am I that I should talk of indoor child portraits? Yet the average indoor picture of a baby is such a pitiful thing—such a botch of ink and soot and white paper—such a hard, staring, mean, unbabylike thing that I, who am not even a pictorial disciple, except as I may love the beautiful, feel that I can say that few people understand the one essential rule in such work.

That one essential rule is this—keep the key or tone, or plane or level, or whatever your pet term may be, of the picture, even and have it high and light. Don't try to take children indoors in dark surroundings, with dark backgrounds or in dark clothes. The snapshot then results in the atrocity,—with the picture properly made beforehand it may be very beautiful.

No, no, most emphatically no—I am not speaking for the pictorial master, nor of pictorial masterpieces, but to the mother and the father, the brother and the sister, the everyday, common or garden variety of human being, such as I like to fancy I am,—the people who want everyday pictures of everyday children in everyday attitudes and everyday clothes, and who ask, not that the lighting be after a formula or the pose according to rule, but that the result be just one thing—natural.

With fear and trembling (inward) I offer some pictures, taken from a pile of duplicates, as evidence of what I mean. Never a man who has read two whole chapters of one single art volume but could rub and tear holes in these—I know it, and care not. But never a woman saw any of them, in my hearing, but didn't have a fit over the baby, and never a comment have I been able to get from any one that they were in any way not natural.

Having slandered my own work (justly, I think) let me call attention to the fact that the picture was a Kodak snapshot and that the shadow side of the face is light. The outdoor pictures are carefully not posed pictures of things as they are—more than casual results, since they were desired and planned, less than posed since they are the results of wasted opportunity.

Now, having talked for an interminable time, I have the uneasy feeling that I have said very little and—if you will be really nasty—you can agree with me! But if that one thing that I have said—that children's pictures, which must be quick in exposure, should be in a high or light key, with little heavy contrast and without too brilliant high lights, should be made with ample exposure and tender development—if that one thing bears fruit, then the forthcoming generation of children's pictures will show more of nature and less of such lighting as never was on sea or land, and the photographic mirror will have less lies to stand sponsor for, and the babies, poor innocents, will have less slanders to live down!



HIDE AND SEEK.

C. H. CLAUDY.

STEREOSCOPIC PHOTOGRAPHY.

By THOMAS BEDDING, F. R. P. S.



STRAIGHT print photography, in contradistinction to gum-splodging, photo-faking, and oil-dabbing, has no more abiding hold on the intelligent amateur than when it takes the form of stereoscopic work. It is that thing of beauty in photography which remains a joy for ever. My experience of the cult is: once a stereoscopist, always a stereoscopist. For example, only the other day I noticed that the gifted William Isaac Chadwick, whose *Manual* on the subject is a classic and who some twenty odd years ago did more than any other man to popularize binocular work, is still contributing pictures to the English Stereoscopic Society. Chadwick has quitted photography for more lucrative fields, but remains true to his old hobby. This instance is one of many.

In glancing over American photographic literature for the past few years I have been disappointed at the little attention which stereoscopic work has received and my object in writing this article is to endeavor to arouse and stimulate interest in the making of binocular pictures amongst the vast army of amateur photographers who take more than a cursory interest in the wonderful phenomena which photography in general is always ready to reveal and of which stereoscopic work in particular is peculiarly prolific. During the years I was Editor of *The British Journal of Photography*, stereo work was my favorite hobby, and I was successful in infecting hundreds of photographers with my own enthusiasm for it. Here in America I propose to make history repeat itself.

What is a stereoscopic photograph? It is the most marvelous illusion in the world, for it reproduces nature itself in miniature, presenting it to the eye in apparent relief, height, depth, roundness, solidity. Moreover, it is scientifically accurate, because it is produced in accordance with fixed optical, chemical, and photographic laws; and, finally, it is pictorially



ANNA.

MRS. CALEB KEENE.

true because it can reproduce in correct perspective, composition and values the view or object which the eye sees and the lenses are pointed at. In this definition I am of course assuming that the stereoscopic photograph is properly made: that its technique is without serious flaw. That being the case it answers completely to every part of my definition. A special word as to the pictorial quality of a stereoscopic photograph is, however, called for.

Years ago Mr. J. Craig Annan loftily condemned stereographs as non-pictorial and refused to admit them into the sacred pale of Glasgow artistry. Later Mr. A. Horsley Hinton, when criticizing a paper of mine on this subject, denied also that photographs just as the eye saw nature were pictorially tolerable. Mr. Annan has probably grown wiser; and as for Hinton, in a paper read before the Southampton convention in 1906, he ate his words by renouncing combination printing and practically avowing his intention of adopting straight print photography as his future medium of expression. This is the place, therefore, to admonish the would-be stereoscopic photographer that these false gods of pictorialism must not be listened to. Annan never properly understood his subject; and as for Hinton, he, so far back as the year 1897, openly avowed that he did not believe in the spurious or combination-printing pictorialism which he was then beginning to preach. It is due to his memory to say that he saw the error of his ways before he died. A stereoscopic photograph can be, and easily so, just as pictorial or any other kind of photograph; and I hope we have read the last of any prejudiced or foolish attempts to prove the contrary.

The essential principles of stereoscopy are quite easily understood. We have two eyes, separated approximately by two and seven-eighths of an inch from iris to iris, or center to center. Each eye sees a slightly different picture to the other and presents it to the brain, which combines the two, and thus when we look out upon a view, or at a single object, or at any number of objects—whenever we use our eyes, in fact,—we really see two views as one. Now all that stereoscopic photography does is to duplicate these conditions. It makes two photographs, taken from different viewpoints, separated by a distance of about three inches; presents the left hand view to

the left hand eye and the right hand view to the right eye ; then, these two views being, with the assistance of a stereoscope, combined in the brain through the eyes, the physiological effect obtained is precisely that seen in nature, namely, the perfect effect of realism photographically rendered. That's all that's to it.

How is a stereoscopic photograph made? By the use of two photographic eyes instead of one ; in other words by a double camera. The typical binocular camera has two lenses mounted on its front, the body of the camera is divided by an opaque septum, and the one exposure suffices for the double negative. This when developed is printed on suitable paper. Then the double print is cut, trimmed, and mounted on cardboard so that when the stereograph is examined it is seen that the left photograph is the one taken with the left lens, and the right photograph with the right lens. Not more than three inches (answering to the distance between the eyes) should separate objects in the foreground of the double photograph, so that when the picture is viewed in the stereoscope, which is nothing more than a pair of magnifiers fitted in a frame, at a distance apart of about three inches, the binocular photograph is examined under precisely the same conditions as nature itself is seen, save of course that it is much smaller. It is a perfect illusion. The whole art of stereography consists of carefully making two prints instead of one, nothing more, and magnifying them to the eyes.

Let the reader dismiss from his mind any idea which may be in it that the stereoscope is a difficult instrument to use. Upon this subject I may usefully quote from a paper I wrote on the subject ten years ago : "It does not possess any wonderful occult property, nor is it a magic construction that produces effects difficult of explanation. The functions of the stereoscope may be summed up in the remark that it resembles a pair of spectacles in so far as it assists or corrects the human vision in the examination of binocular photographs. It has often occurred to me that the stereoscope as an optical instrument receives but scant justice at the hands of modern opticians. I feel that when one wishes to view photographs by the stereoscope he should have his eyes tested as carefully as he should for a pair of spectacles, as it is obvious that defective

vision enters as much into the one case as the other. Were this systematically carried out by competent persons, it might be possible to put the lenticular stereoscope on a footing from which it would not easily be disturbed. Each instrument would be fitted for the special optical requirements of the individual, inequality of foci, distance of eye separation, and the aberrations being provided for. The fact that this is not done is probably the cause of so many of the complaints that we hear from people who do not understand what stereoscopic photographs are, or how they are viewed, and for whose defects of vision, where they exist, no provision is made. Thus a beautiful branch of photography is very often misunderstood and condemned."

Stereoscopic cameras and outfits are to be obtained from the principal manufacturers of apparatus and photographic dealers. Let the reader of the 1909 AMERICAN ANNUAL take up binocular work and I promise him endless enjoyment in a new and attractive world. I look upon this purely as an introductory article; elsewhere I may develop the theme. If I here entered fully into the minutiae of the subject, I could exhaust all the space in this book.



BEECHES.

KATE MATTHEWS.



A STREAM OF LIGHT.

Edgar R. Bull.



W. Crooke.



A QUIET COVE.

E. G. DUNNING.

THE STUDY AND APPRECIATION OF NATURE.

By CHARLES STILLMAN TAYLOR.

*"If Nature plays not her part, in vain is Labour;
Yet if Studie be not employed, in vain is Nature."*

—Lelley.

IT has been often said that a comprehensive knowledge of art is the study and work of a lifetime and this assertion is no doubt very true if the student has the capacity for learning as well as the necessary time and ambition to thoroughly master the subject. There are, however, certain fundamental forms upon which all good art depends and if these principles are so well understood that they can be put into actual practice, the photographer may feel well fitted to attempt the expression of the beautiful in his or her own work. Sir Joshua Reynolds has told us that in so subtle a learning as art, much cannot be taught, because art in its higher aspects is due more to feeling than to mere knowledge. We may cultivate a thorough understanding of art principles, but unless the worker has a natural feeling for the expression of beauty, no

appreciable artistic success can be expected. Art knowledge alone cannot hope to create a work of art, any more than a knowledge of grammar can be expected to write a book. Artistic feeling and appreciation are not common to all and unless one has a natural love of Nature, no amount of knowledge can develop this quality, because it will find but scant encouragement in an uncongenial and unresponsive mind. A personal sketch may serve to more clearly explain this apparent discouragement. A friend of mine who is a very enthusiastic amateur has devoted much time to pictorial interpretation, but with small success. Being of a very practical and mechanical turn of mind, he is working under a great handicap and, although he does not fully comprehend this fact, the greatest satisfaction he can hope to find in photography is its scientific aspect. A sharp, technically perfect photograph is his real delight and substantial facts can alone give him complete satisfaction. When looking at a particularly attractive bit of scenery, he is sure to speculate upon the "correct exposure," or remark that the "actinic value of the light is poor," while the color of the sky is most apt to bring forth the remark, "of clear weather," or a "storm to-morrow," as the case may be. He is pre-eminently practical and his temperament forbids any great appreciation of so subtle a feeling as the expression of a human soul, or of seeing anything but eccentricity in the individual interpretation of a landscape. Yet, however difficult it may be to clearly define the finer feelings of art, it is a comparatively easy matter to set before the reader those rules and principles which form so large a portion of this fascinating study and which have been very aptly called the grammar of art.

It matters not how much we may appreciate the works of the old master painters or admire the unadorned beauty of some favorite scene, there can be no doubt but our love for beauty will be greatly enhanced if we learn to view the subject with the eyes of an artist. When the artist looks at Nature he not only sees what other people see but he also sees that which the average person can be but dimly conscious of. The eye untrained to observe is constantly passing and repassing the many beauties which line the pathway of life, without creating in the mind hardly a thought. To this lack of training—this

deplorable artistic blindness, if you will allow the term—is due the many long, weary miles which the amateur daily trudges in search of material for his photographs. Having no definite idea of what the picturesque and beautiful consists, he cannot see the wealth of material abounding in every turn of the road and which an educated eye would discover, perhaps in less than a stone's throw from the amateur's own doorstep. You can therefore understand why it is important to become acquainted with the principles of art, for without this knowledge Nature must forever remain a closed book, and photography must be ever confined to a mere copying of outward forms, undeniably useful and practical, but hardly capable of expressing artistic feeling.

That this highly valuable knowledge can be acquired by proper study and cultivation, is beyond argument, and while it is impossible for everyone to acquire an equal degree of knowledge or to express emotional feeling by photography, because of natural limitations, this fact still confronts us—that unless the eye is trained to observe things, the mind must remain in ignorance. John Ruskin, in his very instructive essays upon art, has this to say about the education of the mind in reference to the sight.

“The first great mistake that people make in this matter is the supposition that they must *see* a thing if it be before their eyes. They forget the great truth told them by Locke, ‘This is certain, that whatever alterations are made in the body, if they reach not the mind, whatever impressions are made on the outward parts, if they are not taken notice of within, there is no perception. Fire may burn our bodies with no other effect than it does a billet, unless the motion be continued to the brain, and there the sense of heat or idea of pain is produced in the mind, wherein consists actual perception. However, a man may observe in himself, that whilst his mind is intently employed in the contemplation of some subjects, and curiously surveying some ideas that are there, it takes no notice of impressions of sounding bodies made upon the organ of hearing, with the same attention that uses to be for the production of the ideas of sound. A sufficient impulse there may be on the organ but it not reaching the observation of the mind, there follows no perception, and although the motion that uses to

produce the idea of sound be made in the ear, yet no sound is heard.' And what is here said, which all must feel by their own experience to be true, is more remarkably and necessarily the case with sight than with any other of the senses, for this reason, that the ear is not accustomed to exercise constantly its functions of hearing; it is accustomed to stillness and the occurrence of a sound of any kind whatsoever is apt to awake attention and be followed with perception, in proportion to the degree of sound; but the eye during our waking hours exercises constantly its function of seeing; it is its constant habit; we always, as far as the bodily organ is concerned, see something and we always see in the same degree; so that the occurrence of sight, as such, to the eye, is only the continuance of its necessary state of action and awakes no attention whatsoever, except by the particular nature and quality of the sight. And thus objects pass perpetually before the eyes without conveying any impression to the brain at all; and so pass actually unseen, not merely unnoticed, but in the full, clear sense of the word unseen. And numbers of men being pre-occupied with business or care of some description totally unconnected with the impressions of sight, such is actually the case with them; they receiving from Nature only the inevitable sensation of blueness, redness, light, etc., and except at particular and rare moments, no more whatsoever."

From the foregoing you perceive that the study of art is truly a great education—training mind and eye to be forever upon the lookout for all that is beautiful, interesting, and enjoyable in life. I have already said that the artist can see further and understand what he sees much better than others, and while this perception is of the greatest value, it is hardly more than the first chapter in the big book of art. The artist must also have the facility to express what he sees and this is done through the assistance of the rules and principles which have been previously referred to as the foundation or grammar of art. These comprise the laws of composition, of light and shade, of form, and of color. Of color, little or nothing need be said, and although of the very greatest consideration in painting, it is of but little importance in a monochrome medium like photography, where color is an element over which the camera has but very little or no control. Therefore, with the



“MISTS OF THE MORNING, DAMP AND GREY.”

REV. E. G. WATTS.

complex problem of color removed, the photographer may direct his study principally to the subjects of composition and chiaroscuro (light and shade), for it is with these principles, together with the observance of form, that the camera worker is able to express in his print, that indefinable something which has been called expression, individuality, and personality. And when these principles of art have been grasped, everything must henceforth lie with the worker, and it rests altogether with the ambition and inclination of the student, whether little, none, or considerable progress be the result of the future.

A good opportunity for the study of art in landscape painting, of both the old and modern schools, can be found in our several art galleries, and while these collections cannot boast the completeness of the old world, there are sufficient examples of good landscapes to employ many months of your spare time in their profitable contemplation. The canvases of the modern landscape painters will probably prove the most instructive and the works of the new or pictorial school of photography may also be studied with both pleasure and profit. But in our admiration of the works of masters of the brush, we should not strive to imitate them, for while truth and beauty must ever remain unchanged, it is our own impressions or ideas we desire to express, not the imitation of another's feelings, however beautiful and expressive such portrayals may be. Art is not an imitator, for in imitation is found nothing but a make-believe, which if cleverly executed will often attract our attention, until a closer acquaintance proclaims the deception and we find it to be a fraud, which adds nothing to our knowledge, simply repeating what we already know. Imitation is not the end of art, but rather the means employed to express artistic feeling. The artist does not copy Nature with painstaking exactness, seeking to delineate the selection with absolute accuracy—to make an exact facsimile of natural forms. He aims at a higher and more subtle portrayal and we have been told that even the greatest painters have felt so dissatisfied with the work of their genius, that they have endeavored to create something still higher.

The mission of true art is to add to our knowledge of truth and beauty; in its contemplation is found that com-

plete satisfaction which can only become a part of a picture in which has been incorporated much conscientious labor and study. For, as Ruskin says, "In true art, the hand, the head, and the heart of man go together. But art is no recreation; it cannot be learned at spare moments, or pursued when we have nothing better to do." A great deal of benefit can be gained by the intelligent study of art, but a too close application cannot be otherwise than harmful; because if the mind is constantly devoted to but one line of thought, we cannot acquire a broad comprehensive education. The worker who



CANAAN MOUNTAIN.

E. G. DUNNING.

studies art alone, suppresses the originality of his own mind, and in consequence, can only look at the subject with a confined, narrow vision. Such a person cannot view Nature with his own eyes, but in almost constantly comparing this or that arrangement of Nature, with the pictured impression of some favorite artist, and when amidst her own expressive moods, Nature can but recall to mind some familiar picture. This one-sided knowledge is by no manner of means, desirable. Art is, after all, nothing but a guide for the study of Nature and the reader must not regard the principles of art as rules which must be absolutely followed, without exception or the

slightest deviation. It may be remarked that the definition of the word rule, is not, as many are inclined to believe, an exact formula which must be explicitly followed. In an art sense, the word rule means nothing more nor less than a number of principles which have been handed down to us by master painters as the fundamental laws which will assist the portrayal of our own individual impressions. It is not by their strict adherence that we can expect to create a work of art, but rather by using these principles as a fund of information, which we may modify and apply to suit the various subjects we desire to depict.

After these principles are well understood, the photographer should observe and study Nature in her various changing moods and seek to add, little by little, an ever increasing knowledge of truth and beauty. Shakespeare very wisely tells us that to him who bears a love for beauty, beauty everywhere abounds.

*"To gild refined gold, to paint the lily,
To throw perfume on the violet,
To smooth the ice, or add another hue
Unto the rainbow, or with taper light
To seek the beauteous eye of heaven to garnish
Is wasteful and ridiculous excess."*

To have a natural and sincere love for Nature is a possession which we cannot prize too highly, and there can be no one whose character will not improve by the study of Nature, or whose mind will not feel a great loss at its omission. The unchangeable beauty of Nature knows no season; the flowers and budding trees of Spring; the luxuriant foliage and wealth of Summer, are perhaps more attractive to us; but in Winter when the leafy canopy lies buried beneath the spotless snow, a new beauty is felt and we find much to admire in the slender gracefulness of both plant and tree form, from which hoar frost has stripped their summer dress. Emerson tells us that, "Beyond the sensuous delight, the forms and color of Nature have a new charm for us in our perception, that not one ornament was added for ornament, but is a sign of some better health or more excellent action. Elegance of form in bird or beast, or in the human figure, marks some excellence of structure, or beauty is only an invitation from what belongs to us." In

truth, the world is full of beauty and Nature is ever waiting to open the door of her vast treasure house, and if we choose to remain aloof, to close our eyes instead of making good use of them, it is no fault but our own. Who has not felt the joyous spell of the country in Summer, when the air is full of sunshine and the drowsy hum of the bee? And who cannot feel the pleasure of living in so beautiful a world and agree with Jefferies when he says, "I linger in the midst of the long grass, the luxury of the leaves, and the song in the very air.



IN ARCADIA.

MISS KATE SMITH.

I seem as if I could feel all the glowing life the sunshine gives and the south wind calls to being. The endless grass, the endless leaves, the immense strength of the oak expanding, the unalloyed joy of finch and blackbird; from all of them I receive a little. In the blackbird's melody one note is mine; in the dance of the leaf shadows the formed maze is for me, though the motion is theirs; the flowers with a thousand faces have collected the kisses of the morning. Feeling with them, I receive some at least, of their fullness of life. Never could I have enough. The hours when the mind is absorbed by beauty,

are the only hours when we really live, so that the longer we can stay among these things so much the more is snatched from inevitable time."

The art of observing and studying Nature does not consist in seeing with our own eyes or through the sight of others, the literal aspect of a scene, but rather implies the faculty to discover both the desirable and undesirable parts of Nature, that the desirable arrangements may be retained and improved in effect, while the parts felt to be undesirable may be subdued or omitted altogether. This separation and the study of Nature in reference to the expression of personal feeling, has been so happily expressed by Sir Joshua Reynolds in his note on painting, that I cannot resist its quotation (Page 352, vol. 2). He says, "Nothing can be so unphilosophical as a supposition that we can form any idea of beauty or excellence out of or beyond nature, which is and must be the fountain-head from whence all our ideas must be derived. This being acknowledged, it must follow, of course, that all the rules which this theory, or any other, teaches, can be no more than teaching the art of *seeing* Nature. The rules of art are formed on the various works of those who have studied Nature the most successfully, by this advantage, of observing the various manners in which various minds have contemplated her works, the artist enlarges his own views, and is taught to look for and see what otherwise would have escaped his observation. It is to be remarked that there are two modes of imitating Nature; one of which refers for its truth to the sensations of the mind, and the other to the eye. Some schools, such as the Roman and Florentine, appear to have addressed themselves principally to the mind; others solely to the eye, such as the Venetian, in the instance of Paul Veronese and Tintoret; others, again, have endeavored to unite both, by joining the elegance and grace of ornament with the strength and vigor of design; such are the schools of Bologna and Parma. All these schools are equally to be considered as followers of Nature. He who produces a work analogous to the mind or imagination of man is as natural a painter as he whose works are calculated to delight the eye; the works of Michael Angelo or Julio Romano, in this sense, may be said to be as natural as those of the Dutch painters."

What has been said in reference to art and the study of Nature, is just as true in regard to photography as in painting, for in both instances the mind is the creator of the impressions we desire to portray, and while the mechanical features of photography are less capable for artistic expression, it is not so much the limitation of our medium, but rather the limited knowledge of the camerist, that more or greater artistic work is not produced. It has been quite a fad of late among photographic writers, to lay much emphasis upon the limitations of photography, and while there can be no question that our process is less expressive than the brush, it seems to me that it would be of material benefit if we write less upon the technical and devote more attention and space given to the real consideration, which is of course the appreciation and interpretation of Nature—the real source of beauty.



IN THE WILDERNESS (CAPE COLONY)

ARTHUR ELLIOTT.

STEAMED BROMIDES.

By J. M. SELLORS.



THE long suffering bromide print has of late years been subjected to a variety of ignominious and evil smelling operations, such as boiling, bleaching, and anointing its surface with salad oil, terebene, French polish, wax, Canadian balsam, and other sticky and messy unguents for the improvement of its appearance, but although I am a large consumer of photographic literature of all sorts I have never come across any mention of the following process which I have used for many years with considerable satisfaction for brightening the appearance of dull bromides.

All those who have used bromide paper for direct printing or enlarging to any extent must have frequently experienced considerable disappointment at the difference of appearance of the print when wet and after drying. In the first instance it may have deep, luscious, well graduated shadows and delicate half-tones, but when dry it presents a dead, heavy, lusterless, sunken appearance very different from the picture you were so satisfied with when you took it from the fixing bath. That this is a pretty general experience is proved by the fact of so many substances being recommended for rubbing on the surface to restore its pristine vigor.

A far better method is to steam the surface of the dry print. This gives a depth and transparency which approximates very closely to that of the wet print, and as far as I have experimented can be obtained in no other way. No special apparatus is required, the ordinary domestic kettle being all that is necessary. When the water is boiling hard, and a strong jet of steam is issuing from the spout the surface of the print is brought to within about an inch of the spout and moved about fairly quickly until the steam has acted over the entire surface.

On examining the print it will be found to have a semi-glossy appearance. As a rule the one steaming will be sufficient, but



J. M. SELLORS.

Illustrating the paper on "Steamed Bromides." In the original the steamed portion, at the upper right hand corner of the print, is plainly evident.—EDITOR.

if in a minute or two this partially disappears a second application of steam should be given. The steam should on no account be allowed to play on any one point for more than a second or so as there is a danger of entirely melting the gelatine film.

Unless one has the cuticle of a rhinoceros and the feelings of a bronze statue it is not advisable to hold the print up to the steam with the hand, but to pin it by the four corners to a board and hold that up, as the impinging of a jet of live steam on the fingers for the fraction of a second will cause a sensation the reverse of pleasant.

Nearly all the bromide papers on the market are amenable to this treatment, but it has very little, if any, permanent effect on a few of the very thinly coated "matt" papers. Considerable care should be taken not to over steam prints that have been toned, as I have found that *repeated* applications of steam will affect the color. I am sending to the editor with this article a print partly steamed but I am afraid it will be useless for the purposes of reproduction as I do not think a half-tone print would show the difference between the steamed and the unsteamed parts. The surface that is obtained is very much that of a first rate carbon print.



MANDRAKE BLOSSOMS.

W. E. BERTLING.



PHOTOGRAPH FOR A POSTER.

Copyright 1908 by Davis & Eickemeyer.

BY RUDOLPH EICKEMEYER.



PORTRAIT STUDY.

MISS HILDA STEVENSON.




PASTORAL.

A. Keith Dannatt.

SPEED vs. MERIT.

By CHARLES E. FAIRMAN.

 HIS is a rapid age in which photography is keeping well to the front in the constant demand for greater rapidity. Focal plane shutters with a possible exposure of 1/1200 part of a second and even greater. Anastigmatic lenses in all degree or rapidity until "F4.5" has been reached and become a possible part of the equipment of the climbers in the scale for extreme speed. Rapid plates decreasing the latitude of exposure $\frac{3}{4}$ are now on the market and the struggle still goes on. Manufacturers weary the brains of inventors. Demonstrators bewilder the minds of would-be purchasers. Speed, speed, speed, is the constant quest and the trail is warm.

I wonder if those in the chase for higher speed in photography ever stop to consider the direction in which we are tending. Has anyone ever inquired whether rapid lenses, rapid shutters, rapid plates, rapid papers, and all of the accessories to rapidity have resulted in greater pictorial excellence. Does the fact that a landscape may be made in one half the time required ten years ago add any new charm to nature. Do rapid plates give truer tonal values, or do speedy printing papers possess any advantage over the papers of a former decade? Is it the object to make photography more expensive, or more universal?

I do not intend by these inquiries to attempt to belittle the value of rapid plates, papers, shutters, or lenses. They have their uses, their advantages, and also their limitations. If the object of all photographic endeavor is to photograph rapid express trains, speedy horses, rapidly moving crowds, or other subjects where extreme rapidity of lens, plate, and shutter are required; then in such cases the best available equipment is none too good, and is well worth the cost of the apparatus. It is my contention that this class of work is but a small part of photographic activities, and that in the headlong rush we forget all other considerations except those of speed.

My attention has been called to this undue emphasis to a part of the demands of photography, by seeing two pictures,—street scenes, in which the rapid lens is contrasted with the old type of rectilinear construction. One was a nearly faultless specimen of technical skill. The other a botch, the lighting poor, the figures in the street blurred, the development harsh. It was the old illustration of a “horrible example,” and the evident moral was “buy a trigmistatic.”

Two things were obvious, the work of the high priced lens was good, the work of the cheaper lens bad. It was also apparent that the work of the cheaper lens was made horrible with the intent to lead the unsuspecting that this was a fault due to the lens, and not to the malice of the man behind the camera. If the object of photographic enjoyment has no higher ideal than the photography of street scenes, doubtless the rapid lens would do as well as any for the limited ambitions of the user.

Photography is something more than clever craftsmanship, although such a complete mastery of technique is in all conditions commendable. It is something more than the machine-like precision of turning out the largest amount of negatives and prints in the least possible time, although all must admire that deftness by which a man becomes a piece of animated machinery. It is something more than absolute mathematical accuracy, although accuracy is not only desirable but necessary in some grades of mechanical work. One may have all of the foregoing accomplishments and yet know but little of the possibilities of an art that is while an art so much of a science that scientists have as yet learned but a part of the truth.

We need once in a while to forget speed, and turn back to the days of the pioneers; to the period when the beauty of nature and not the rapidity of the race track, the steam cars, or the automobile, was the attraction. It will be well to remember some of the landscapes made with single lenses, or those made with pinholes, or those made in the wet plate days, and ask the question whether, outside of the possibility of doing some few things not in themselves largely connected with the affairs of life at a more rapid speed than was possible years ago, we have made the progress possible; if as a class we had not gone frantic over the question of speed.

Of the thousands who indulge in photographic experiments

and recreation, the percentage with a desire for work where extreme speed is needed is extremely small. It is also true that the percentage who have any inclination toward pictorial photography is also small. The explanation seems to be that too much attention has been placed upon the making of records, faithful copies of nature, and too little time given to work calculated to develop the art side of the photographer.

The copyist, the photographer who merely copies nature, who possesses no keener vision than the picture revealed by the topography of the country, belongs to the class of the mechanical piano player, the Pianola, the Aeolian, the Cecilian, and others—admirable inventions, but unable to copy the personality of the composer. Photography should be creative, constructive, expressive of the personality of the artist, and for this purpose rapidity is not an essential factor.

Welcome to the rapid lens, the fast plate, the quick shutter, and the improved paper. They are needed. A more universal welcome from a larger army of amateurs awaits the person with the quality of leadership, and the ability of organization, who can lead those who are now groping their way into a better knowledge of the art possibilities of photography, and the breadth and length of that unexplored country into which the copyist and the man with the shutter speed of 1/1200 of a second has never entered.



PAVIORS.

A. W. WALBURN.

ABOUT CARMEL.

By EDGAR A. COHEN.



THINK it my good fortune that circumstances shaped themselves so I could give up my office work, and take to picture making as a means of gaining my living. I have been at it half a dozen years; and when an occasional wealthy friend asks whether I am not tired enough of it to devote my energies to some more sensible occupation, I tell him I would rather make pictures, even were I assured double the remuneration on another class of work.

You see I'm talking as if you were one of my camera cronies, come to my den to look at pictures, exchange views, or get pointers. This is not to be anything else than a homely chat, just as if you were really with me in my workroom.

Some people think it strange for a man to spend his time working in photography; but I believe I am doing some good in the world. My aim is to make beautiful pictures; and every time I succeed, I have the satisfaction of knowing I am giving pleasure to a lot of people. Money is not everything, and the personal satisfaction and pride in creating something pretty makes the work attractive.

If you were to ask which is my favorite picture-making locality, my answer would be "at Carmel by the Sea." Of course you would want a reason, and I could give you more than one—in fact lots of them. Perhaps the best way is to tell you about the place.

Geographically, it is 130 miles south of San Francisco, in Monterey County. The city of Monterey, four miles north of Carmel, was the principal Spanish settlement in California, as well as its first Capital after it entered the Union. Monterey still has many of the old adobe buildings, and the mantilla is yet seen on its streets.

Climatically, Carmel has few equals. There is no winter. It is eternal spring. A pine covered ridge to the northwest shuts off the summer trade winds, and the air is always soft.

I have seen the thermometer at 80 degrees on a January afternoon, with bathers disporting themselves in the surf.

Historically, it was the earliest permanent settlement on this coast. In October, 1603, Vizcaino, accompanied by three Carmelite friars, landed and explored the country. Owing undoubtedly to the country being of similar configuration to the holy Mt. Carmel, he gave it the same name. He made a map showing the river as the "Carmelo." Later explorers made more extensive maps, giving Vizcaino as their authority for calling the country "Carmel."



CARMEL: THE DUNES.

EDGAR A. COHEN.

In 1770 came an expedition of the Catholic Church, headed by Padres Junipero Serra and Crispi, and planted a settlement at Carmel. Shortly thereafter they went four miles across the ridge, and built the Monterey Mission; but in 1771, owing to its softer climate, Father Serra returned to Carmel, and built the San Carlos Mission. He converted the Indians, and induced them to quarry and carry a couple of miles, the rock from which the church was built. It was the most important and celebrated of the Missions, being the official residence of its presidents. Its facade and belfry tower are beautiful; but in its restoration the original tile roof has been re-

placed by shingles. There was a large settlement of adobe houses around the church. Now they are masses of crumbling ruins, telling of the faded power of their builders. Every comer with a camera pauses here.

Pictorially, it is almost inexhaustible; and the subjects are so varied as to make the locality famed for its beauty.

Friends often suggest my visiting a certain locality for pictures. I have been known to tell them, that I could spend the rest of my natural life in any county in California, and not lack subjects. I have always believed picture-making to be an instinct, dormant in all of us, until we begin to cultivate it, and then making us see and appreciate all that is beautiful in nature. Now Carmel is a place where I have been many times with my camera, and where I hope to go many more.

Scenery is not the only attraction, for the people are unique, in that they all seem to excel in some particular direction. Most of them have homes of the bungalow type, where they spend such of their time as they are able to give the place. There is always a goodly colony of artists. The literary and musical contingents vie with each other in numbers, while the camera sharps are not lacking. When the student goes to Carmel for a vacation, he is startled to find most of his college professors have homes there, and have developed into common ordinary human beings; in fact they say at Stanford, about its professors, that they are afflicted with cerebro-spinal-Carmelitis.

There are a couple of homelike hotels, with enough stores for the utilities; but there are neither police, courts, nor saloons.

The shore line of Carmel Bay is a crescent of about 8 miles. Mountains surround it, sloping to the shore. In the center of the crescent is a beach of over a mile of pure sand; behind it a fringe of dunes; then rising upward a pine forest, through which are scattered homes. To the south comes in the Carmel River, 45 miles long. When there is a heavy sea running, it closes up the mouth with sand, forming a lagoon; but the river soon cuts its way out once more. There is good fishing here for trout and salmon. The rest of the crescent is made up of cliffs and pebble beaches.

For five miles north of Carmel Bay is a grand coast, with timber overhanging the cliffs; but it is the five miles to the

south that will make you dream of pictures in your sleep. Here you find every kind of subject you can desire; silver beaches between high cliffs; sea caves full of sea urchins, abalones, and all kinds of shell fish; deep fiords, with water so clear you can see fathoms down to the bottom, and also big fish lurking in the shadows of the cliffs; natural bridges; arch rocks; mighty horseshoes, with waves on each side and dashing through; and tunnels through the cliffs from fiord to fiord. Skirting the shore runs the road, with its succession of pictures; and down to it slope the mountains, with their forests, canyons, streams, waterfalls, and cattle grazing on the slopes.



CARMEL: HORSESHOE COVE.

EDGAR A. COHEN.

Eliminating the genre class, did you ever stop to analyze what makes a picture? All have not the same tastes; but according to my views, the component parts, with their relative values, may be generally stated as, trees, water, sky, and a touch of animal life. In the Carmel country we have every conceivable combination of these various components.

The seashore is always prolific of pictures, but it is seldom you can combine trees with it; and any tyro cannot succeed in reproducing what he sees. By the ratio of my aspirations, I have been only moderately successful.

I always had a good deal of respect for Dundas Todd, be-

cause he compiled an exposure table that comes very near being correct. I have had one for years, and though I have only used it once, I have found it correct by occasionally comparing it with the field notes of my best negatives. For that reason I always recommend it to beginners who have trouble timing. If I recollect aright, he classifies the quickest things a camera has to cope with, as snow scenes, seascapes, and clouds; while he either says, or ought to, that forest scenes require on an average 50 times as much exposure. When you have a good diffusion of reflected light behind you, it is not so bad; but if your picture is dashing waves, seen through trunks of trees, with almost all the light beyond the trees, you have to give 1/10 second, to stop the motion of the water, and your trees are bound to be undertimed. There is possible only a compromise between the extremes. I use a single coated plate of fairly fast speed (usually Seed's 26x) as a faster would give increased contrast. I do not advise non-halation for such subjects.

Some years ago W. H. Oliver, Seed's Pacific Coast demonstrator gave me the following developer formula for fast work:

A.	Water	40	ounces.
	Sulphite of soda.....	1¾	"
	Metol	1½	"
	Pyro	½	"

Dissolve metol first, next pyro, then sulphite.

B.	Water	20	ounces.
	Carbonate of potash	4	"

To develop use:

A	2	ounces.
B	½	"
Water	4	"

Should more density on very quick exposures be desired, use 2 ounces or less of water. For quick exposures, use fresh developer. For normal exposures, after using developer twice, take half old and half new for each development. In very hot weather use a little more water.

This is a good stock solution, but it would not answer for the subjects mentioned, so I alter it as follows:

A	1	ounce.
B	1	"
Water	2	ounces.
Ammonium persulphate	4	grains.

Dissolve the ammonium persulphate in the 2 ounces water. Do it by ruby light.



R. Dührkoop.

I give full development to get all the detail possible in the shadows. My theory is that A and water give contrast, while B tends to soften. As the intense high lights develop, the ammonium persulphate keeps reducing them without affecting the shadows and half tones. In this way I get a negative that will print without dodging.

I have many negatives of sunrises and sunsets, made in the San Francisco Bay district, where the action of the waves is slow, and where the above developer in its normal proportions would have answered. I used a five times color screen, and



CARMEL: SUNSET FROM POINT LOEB.

EDGAR A. COHEN.

when the waves had any action, was of necessity limited to an exposure of $\frac{1}{2}$ second.

At Carmel the waves move too fast to permit the use of a screen, especially on sunsets, when the sun has lost its actinic power. The light is on the crest of the waves, and the trough is all shadow. If the sun has still half an hour in the sky, I use the first formula, with the addition of 2 grains of ammonium persulphate dissolved in the water; but should the sun be sinking, I use the second formula.

When you have had your fill of the grandeur of the cliffs, the roar of the waves, and of wondering what lies beyond the

ocean horizon, you turn into the silent aisles of the forest, where as you wander through great trees and canyons, and over hills into valleys, a new set of emotions and beauties awaits you.

After the turmoil of the shore, the peace and loveliness of the forest with its lights and shadows, fills you; and you wish color photography were so far perfected, as to enable you to reproduce what you see. I have tried to do it with Lumière Autochrome plates; but have been unable to handle the intense contrasts satisfactorily. On comparatively open landscapes,



ARCH ROCK, FROM PEBBLE BEACH.

EDGAR A. COHEN.

with the sun behind me, the Autochromes are an absolute success; but not feasible for photographing against the light, nor for forest interiors.

There are many picturesque walks around Carmel; and that is the kind of locomotion that brings the negatives. If you are on foot you give the time necessary to study a subject; you see a likely looking place, and go to it; whereas, if riding or driving, you usually make a mental note of it for some future occasion. Here only do we find the famed Monterey cypress—gnarled, twisted, and stiff—like no other tree, except the cedar of Lebanon, which graces the slopes of the other Mt. Carmel.

We pause on our tramps to gather strawberries, thimble,

and blackberries; we admire the profusion of brakes and ferns; and when we come to the forest glades, we stop to gaze on the wealth of wild-flowers, and wish absent friends were there to enjoy them with us. We rest on fallen monarchs of the forest; and perchance wish we had brought more lunch, as picture-making is hungry work. We find dead pines, with poison ivy climbing to their tops, and great groves of spreading live-oaks; and it is all good picture material. Then we make a trip into the river bottom, where willows, alders, sycamores, and oaks abound; and follow the feeding streams into the canyons,



CARMEL: WIND BLOWN OAKS.

EDGAR A. COHEN.

where we find great redwoods (*sequoia sempervirens*), some of them 16 feet in diameter, with the lowest branch more than 100 feet from the ground.

The hand camera snapshot man may be as good as anyone on the seashore; but when he gets into the woods, a scale does not more than approximate focus, and he needs a tripod and also a ground glass to judge his time and make a proper perspective. The light is deceitful, and will do things to an exposure meter.

Most photographers give too little time in exposing for trees. I suppose it is because they fear halation. Once I did; but now I simply do not have it, or at least so rarely as to amount

to the same thing. I bethought myself that both under and overtime resulted in thin negatives, and that if I so timed as to fully expose my shadows, I would so overtime my intense high lights, as to give them the same printing value. It worked out that way, but my half tones were not always satisfactory; so I had to look further into the chemistry side of it. I took up with a soft metol-hydro developer, or in other words used an excess of the carbonate.

When I am up on the ridges making a map, I use a double coated plate. It enables me by a little extra printing to bring out my distance and clouds, without any appearance of their being overtimed. In the woods, aiming to do away with extreme contrasts, I use either a single coated plate or a film, timing for the shadows; for the same purpose, I add say 4 grains of ammonium persulphate dissolved in 2 ounces of water to my developer, which usually insures nice gradation of tones.

I would suggest to the occasional worker, that on snapshots of contrasty subjects, he take 2 ounces of Velox developer, and add to it 2 grains of ammonium persulphate dissolved in 2 ounces of water; on forest interiors and tree studies, where he has reason to fear contrasts and halation, add to 2 ounces of Velox developer, 4 to 6 grains dissolved in 4 ounces of water. Remember that white light has a tendency to destroy this chemical while in solution, so do the dissolving in the dark-room. The factor of metol-hydro is 5. Let him use it in developing, and under no circumstances stop till he has carried the negative through the full time. On over and undertimes extra development will be necessary.

Some subjects are better handled in the impressionist, and some in the realistic style; then too some must be perforce of the former, or be let alone. Take for instance a landscape on which you have to give time on a windy day; the grass and foliage will blur, while the rest of the negative will be sharp. To remedy this, get a sheet of clear celluloid, and cut about 4 pieces to the size of the negative. Place them between it and the paper. The result will be an even diffusion, or in other words a soft impressionist print. A sharp negative can always be made to give a soft print by this method.

I hope you may all have the pleasure of going to Carmel with your cameras, as I know it will repay you.



THE WATER NYMPH.

Miss Kate Smith.



HURRY AND LEISURE.

MRS. D. MAHONY.

COPYING PRINTS.

By C. GEORGE BULL, M.D.



AS I have at times endeavored to glean information on this subject and been unable to find much about it in photographic magazines, it occurred to me that some personal experiences might be interesting. Though I have frequently made copies of paintings, engravings, half-tones, prints, etc., it was only lately that I felt the positive necessity of making good printing negatives from some old prints made years ago.

I wished to make up an album of prints taken at and around Lake Webber, a fishing resort in the Sierra Nevada Mountains, but on looking over my old negatives I found several rapidly disintegrating from intensification, so that they were absolutely unprintable.

I may say in passing that I have long ago given up intensifying negatives, since—though I have tried many different methods—they all seem sooner or later to go to pieces, notwithstanding they have been thoroughly washed. I now make a contact positive if the negative is very weak, intensifying the positive and then make a contact negative from that; but, as Kipling says, "That is another story."

The prints I had to copy were all 5 x 7 in size; some were on rough velox, some on carbon velox, and others on aristoplatino. A few were yellowed and faded, probably from insufficient fixing. All were pasted in a book, the pages of which were badly buckled. First then, I fastened the book, opened at the print to be copied, to a box placed at one end of a good sized flat table, straightened the page as best I could with long nails driven into the box to hold the page in place; I then set up my camera—a 5 x 7 Premo with a Goerz 8¼ inch focus lens—parallel to the book and about three feet from it, focusing the print so as to nearly cover a 5 x 7 plate.

The room I worked in has a large north skylight, also a west side window. On the other side of the print I placed a



THE NEW BOOK.

A. B. HARGETT.

white screen and on the table below it a looking glass. The exposure should be generous, under-exposure and strong developers being things to avoid. I gave an average exposure of 20 seconds with a 16 stop on a 26x plate (which gives very good values) in June on a fairly bright day from 10.30 A. M. to 3.30 P. M., and, as the prints were in monochrome, I used no screen. A piece of white cardboard was rapidly moved about the sides of the print to give even illumination and thus help prevent the grain of the paper showing, by avoiding the shadows from the paper's rough surface.

The aristoplatino prints were of a warm brown tone, but I did not find that they needed much more exposure than the gray or blackish velox prints. The negatives were then developed with a not too strong eiko-hydroquinone developer without bromide, the development being not carried as far as ordinarily, which gives a soft negative and also aids in preventing the grain of the paper showing.

Prints made from the above negatives proved not to be too flat nor too contrasty, but have all the appearance of being made from the original negatives.



THE RIVER WALK.

H. W. HALES.



THE CUSTOM HOUSE, DUBLIN.

MRS. D. MAHONY.

THE OIL-PIGMENT PROCESS.

By JOHN H. GEAR, F.R.P.S.



O printing process has been talked about so freely in England during the past twelve months as the oil-pigment process; it has claimed greater interest than any printing process has for many years which interest will increase among those capable of doing justice to it, but we fear that those who master it only in a technical manner and make plain or straight prints will not continue to find increasing interest and delight. Those who are unable to depart from the "straight" print will without a doubt generally produce much more satisfactory work by means of the many old printing processes which give them less chance of running amuck with the values of their prints. The greatest features of the process are the possibilities it offers to correct the tone values which, as a rule, are incorrectly rendered in the mechanically made photograph, its accent of brilliant sunlight without hardness, its accent of the deepest shadows with detail in the shadows illuminated by reflected light with a gradation and richness equalled by no other process, and its facility for massing the tones and general effect. Admitted that it will perform these functions in the hands of those capable of departing from the direct printing methods, it must also be admitted that therein lies the danger; many whom I know are struggling with it at the present time would be producing more satisfactory work in other processes. Photographers almost devoid of some original pictorial sentiment must find the oil-pigment process a very unsatisfactory process by which to produce their prints; after the exposure of the bichromated gelatine paper under the negative is completed then the mechanical part of it is at an end and it is no longer a process for the mechanical photographer. On the other hand it has already been the means of permitting many to soar far above the standard they would have otherwise obtained had they kept to the more direct methods of picture making by photography. Enough of such arguments,

it was not my intention to write ought of the process excepting a few practical hints and warnings.

It must not be assumed that because the process offers so much latitude, any kind of negative will do; I refer to the negative—its gradation—not to the subject. A negative of good gradation, free from fog in the shadows and not of great density, free from yellow stain, (such a negative as would produce a nice soft print in platinotype, I will not say in gelatino-chloride, as a negative whose shadows are somewhat veiled will make an excellent P.O.P. but not an ideal print in platinotype), such a negative will produce a print most difficult to pigment and should be carefully avoided except by the expert “oiler.”

The paper I prefer is the gelatine coated paper as used for the carbon double transfer process, it carries sufficient gelatine to produce prints with a rich effect and has the advantage of not destroying the texture of the paper's surface beneath the gelatine when the print is dry. A paper more thickly coated with gelatine may be more easily pigmented with contrast by the beginner but will not be so effective when completed.

Sensitizing is preferably accomplished by brushing the following solution upon the surface with a flat 2½ inch hog hair brush; stock solution: bichromate of ammonium, 100 grains; carbonate of soda (recrystallized), 10 grains; water, 4 ounces. For use take one part of this to two of absolute alcohol. If an inferior sample of bichromate of ammonium is used then 20 to 40 grains of sodium carbonate may be necessary. The paper should be hung up to dry spontaneously where even the faintest rays of white light, direct or reflected, cannot fall upon it, then desiccated before exposure under the negative.

Print in diffused light, never in direct sunlight; the duration of printing may be from four to ten minutes in good summer light if the negative is of a correct opacity. Examination of the amount of printing must be made by artificial light, therein lies one of the secrets of success. The printing should be continued until the detail in the highest light is only just visible but not further. The print when removed from the frame should have the appearance of a well exposed undeveloped platinotype print.

Immerse in water thoroughly and equally for 30 to 60

minutes, during the cold weather the temperature may be raised to 70 Fahr., a higher temperature is not advisable at any time. The sensitized paper must be carefully protected from all daylight, however weak, right up to the washing of the print when full daylight may be used. It is the care which has been exercised in sensitizing, protecting the paper from light, and the correct exposure, which will determine the success or failure during the pigmenting stage.

To pigment the paper lay it upon a piece of clean paper (not blotting) and wipe off all surface water evenly with a piece of butter muslin, next lay the print upon three or four pieces of blotting paper or Robosal board soaked in water and then upon a drawing board. The blotting paper must be kept quite wet during the pigmenting, if it shows a tendency to become dry remove the print and resoak the blotting paper, several times if necessary. The pigmenting of a 10x8 may take any time from half an hour to one and a half hours according to the character of the print and the work necessary to expend upon it.

The pigment may be that as used for fine copper plate printing or lithographic printing. In practice it is found that all inks are not suitable, however expensive or good in appearance.

Spread the pigment on a piece of ground glass thinly and evenly charge the brush but not too freely.

The best brushes are those made of the polecat hair and cut hart's foot shape. One about one inch or one and one-quarter inch across, one about three-quarter inch; one about half inch; and the smallest one-quarter inch are necessary, with three or four small flat hog hair for picking out the lights and a small sable pencil or two to accent a shadow. The pigment should be applied thickly where required and sparingly where not, always working with a stippling action with the brush at right angles to the surface of the paper. A slow decided action will apply ink whilst a rapid will remove it. Very little bouncing or "hopping" of the brush should be necessary to remove pigment; such a method of working is very undesirable and is generally productive of dirty prints.

Before working the print have a definite idea in view and do not meander along wondering what will turn out; such indecision will only end in failure. Make a bromide print and



A QUIET STREAM.

John Beeby.



WILLIAM GILL.

roughly work it with stumping chalk to serve as a guide, then the work produced will have the stamp of precision.

Always commence pigmenting with a hard ink and soften as found necessary, soft ink may follow hard ink but not vice versa. The fuller the printing, the harder the ink, whilst short printing will need soft ink. If the pigment refuses to adhere use softer ink or more exposure necessary. If print appears too flat or without contrast, the reason is too soft ink, too full exposure or not sufficient soaking after printing. Soft ink produces softer gradation and smoothness, hard ink, contrast and granularity.

It has been recommended to resoak the print during pigmenting but I have not yet found this necessary and I think it inadvisable to do so. If resoaking the blotting paper will not supply sufficient moisture to the print to allow the pigmenting to proceed as desired there is something wrong elsewhere in the method of working.

Perfect cleanliness with the brushes is most important; they should be well washed out immediately after use in petrol or benzoline and placed in paper caps whilst still slightly damp with the petrol; the brushes will then retain their proper shape for future use.

According to the care taken of the brushes and the state of the room in which the print is pigmented and the observance of cleanliness at all stages so will the print be clean or dirty; suspend the print to dry in a warm current of air, it can be then rubbed with a handkerchief over the surface and much of the dirt will come off, that which remains must be removed with a sharp lancet. The print may be finally spotted with ordinary water colors.

Lastly, I would impress upon all "oil-ers" to aim at producing prints of smooth texture, velvety shadows and a sparkle in the highest lights which can be equalled by no other method photographic; then justice to the process will be done.



A CITY HIGHWAY. (Custom House: Dublin.)

MRS. D. MAHONY.

PASSE-PARTOUT.

By J. WILL PALMER.



ES, we've all made passe-partout! We know how easy it is,—just place a mounted print behind a plate of glass, bind them around the edge with gummed paper strips,—and there you are! passe-partout.

Yes, we have all done these things, but, did any of you ever mount up a print in this manner and hang it up in the parlor? and did it always hang there, a joy to the heart, a pleasure to the eye; or did it “slip its moorings” when least expected, and tumble down in a chaotic mass on the piano?

I will confess I have had experiences which cause me to ask these questions; I well remember my feelings; I would prevent others from having similar ones if I might; it is for this purpose I am writing these lines.

Passe-partout pictures hang on the walls of my home, stay there, no matter what the weather! Even Gen. Humidity does not dislodge them—and why? Just what I was about to tell you.

Just this. When you have the mounted print and the plate of glass—same size and nicely cleaned and polished, provide also a heavy piece of cardboard of the same size to place behind the mounted print; now procure some brass rings—button rings will do—and some narrow tape; punch holes through the cardboard back at proper points for hanging, cut a piece of tape five or six inches long, slip a ring over one end and placing the two ends of tape together pass through the hole in the back board and bring the ring close up to the board; spread out the ends of the tape and glue them down to the back board; paste a piece of paper over them, and rub down smooth. This will make a strong and durable hanger; use one or more as occasion requires, I usually use two for any size print, however small.

“Why,” I hear some one say, “Just the way I have always done!” well, so be it, but follow on.



R. Dührkoop.

Now place the cardboard back on the table, and on it place the mounted print—face up, and on this place the glass plate. “Exactly as we have always done!” yes, but what next? “Why, the gummed paper binding strips!” No, here’s where we differ.

Take some strips of heavy gummed cotton or linen cloth,—this can be found in the stores—about three-fourths of an inch wide; sometimes called “Seton”; cut four pieces about five or six inches long; wet the gummed side of one of them, and lay across one corner of the glass diagonally allowing the edge of strip to come even with the corner of the glass plate; now bend the ends back over the edge of the glass, print and back board and up on to the back of the back board where it will be found they will lie—the two ends of gummed strip—side by side in a diagonal position from the corner of the back; rub down smoothly and firmly. Treat the remaining three corners in the same manner.

Now bind the whole thing with your passe-partout binding strips, if you like. I use ordinary cover paper instead, cut into strips with knife and straight edge,—I paste one edge for a distance of about three-fourths of an inch, lay on the glass front about one-half inch using a “T” square to get it straight with the glass—rub down smooth; miter the end with a sharp knife, and continue in this way around the four sides of the glass. Now turn the whole thing face down on a piece of paper, and pasting thoroughly—one side at a time—bring around edge and up on to back and rub down smooth.


Now cut a piece of light weight cover paper one-half inch smaller each way than the print, and paste over the back to form a finish; cutting slits where the hanger rings come and slipping same through.

Clean the face of the glass with a damp cloth, and allow to dry.

Try one; it is much simpler than the telling of it, and I think you’ll find it worth while.

TWENTY-FIVE YEARS AGO.

By JOHN BOYD.

 HE camerist who to-day points his dainty pocket instrument at some passing scene, snaps the shutter, winds on a fresh film, and when the roll is finished, puts it in a machine, turns a crank and in a few minutes is examining his results, all without going into a darkroom, has little conception of the cares that confronted the amateur or professional who followed the art twenty-five years ago.

It is certainly due to the improvements made about that time in plates and outfits that introduced the amateur into the photographic arena.

Before then a few dabbled in its black and uncertain depths but we saw little of their results, and no wonder. Cameras were bulky; lenses slow; plates were prepared, exposed, and developed whilst wet; paper had to be sensitized 24 hours before it was to be used; and so on throughout all the various manipulations.

Let us stop for a moment and look back at the best methods in operation a quarter of a century ago, and then note the progress we have made in that time.

The outfits furnished then were not as compact as they are to-day, but they were nevertheless considered very convenient. Lenses were mostly imported. The great factories of Ross, Voigtlander, Dallmeyer, Darlot, Steinheil, Derogy, etc., sent over all that were needed. They were very bulky, and had none of the fine corrections that exist in the types introduced later. It was the practice to stop down considerably in order to get depth of focus and definition, the artistic features obtained by the use of large diaphragms not being utilized to any extent.

Instantaneous shutters were in their infancy. The worker who could not manipulate his lens cap or focusing cloth fast enough for the subjects before him, made himself a drop shutter. This was fast enough for most work, and I have often



THE SERMON.

T. LEE SYMS.

taken express trains with one that was speeded up by an elastic band. This practice played havoc with the cementing of the lenses, as many found out when it was too late. We were, however, learning in those days in the very practical school of experience, not having the knowledge, or the means for telling our troubles to one another through the agency of camera clubs, magazines, etc.

I now come to the subject of plates, and opinions on these were for a time very much divided. Every man who could make a successful wet plate considered it his duty to try the dry process with a view of becoming a like expert with the new invention. Some of these thought there was a gold mine in making them on a large scale, and manufacturers without number blossomed forth with a blare of trumpets, but in the majority of cases faded away. Others persevered, improved their products, and are in business to-day; while many more struggled along for a time, and were then absorbed into some of the greater concerns, the latter eventually dominating the market.

All of these produced just a plain, gelatine bromide plate, though some makers put them out in different degrees of sensitiveness. They recommended one grade for transparencies and lantern slides, another for landscapes and general work, while the fastest were for dark days, children's portraits or instantaneous work. The price varied according to the speed, and the average was about 3 times the price they are to-day.

Then, as now, there was a multiplicity of developers, all of them put forward by their advocates as the universal formula. The ingredients were much different from what we use to-day. Let me give one which was much used by professionals, taken in full out of my scrap book:

STOCK SOLUTION NO. 1.

Pyrogallic acid	1 ounce.
Alcohol	6 ounces.

STOCK SOLUTION NO. 2.

Bromide of ammonium	60 grains.
Ammonia, concentrated.....	1 ounce.
Water	6 ounces.

For the day's use, have two other bottles to hold 16 ounces each. Take 1 ounce No. 1, and 15 ounces of water, label this



CAPE FLOWER GIRL.

MRS. CALEB KEENE.

“Developer.” Take 1 ounce No. 2, 15 ounces of water, label it “Accelerator.” For use take equal parts of each.

This worked very rapidly and development was usually complete in less than two minutes with normal exposures. The developer had many drawbacks, yet it was as good a formula as any that then existed. One’s fingers might almost as well have been put through a nitrate of silver bath, and exposed then to the light as to use this solution for half a dozen plates.

All standards of excellence in negative making were then judged in comparison with the wet plate process, and a developer or plate which did not give these results was apt to be condemned. This led to many unusual combinations of chemicals, and had I an opportunity, it would doubtless prove an eye opener to modern chemists to quote some of them—in fact it is hard to understand now how some performed their functions at all.

Intensification and reduction were in everyday use, brought about by the plates and developers not being in harmony. Few workers followed the makers’ directions, for the reason that each man considered himself an emulsion maker, a compounder or a chemist. If he did not make dry plates, he certainly knew the *best* developer, and this he was wont to use on all occasions, not caring much what formula the plate maker followed in coating the glass. If he could not get results with A’s plates, he tried B’s and so on, ever blaming the plates but never the developer.

Ninety-nine per cent, of the prints were made on “silver” or albumen paper. The paper was purchased by the ream all ready albumenized, and the photographer each evening “silver-ed up” as much as he considered he could print the following day. This when dry, was put into a fuming box, where a saucer of liquid ammonia sent up its fumes to “liven up” the emulsion. From this it was taken, cut into sizes and printed, the toning following afterwards—especially if the weather was warm.

Much of the after success with the paper depended on the silver bath, and every photographer took special pride in the perfection that he could reach with his sensitizing solution. He maintained it at a uniform strength of from 55 to 60 grains (of silver) to the ounce of water. It was kept acid or neutral

as the worker preferred; was given its daily sun bath; filtered occasionally; the sediment being saved for further treatment, or sold to the refiner who collected all the wastes from silver baths, toning and fixing solutions, silver paper clippings, etc.

I need not dwell at any length on the workings of the gold toning baths, as they are still in common use, though not with albumenized paper. There was, however, on every toning day one heart breaking occurrence that caused the great thinkers to sit up nights to try and find a remedy. This was the daily crop of blisters. They came in all sizes from those like pin heads to great fellows as large as eggs. They stood up on the paper like fish bladders, and needed careful attention in all stages of the work if the print was to be saved.

Such is an outline of the tools and processes in use a quarter of a century ago—a period that brought many changes in the methods of working, some of which at least are responsible for introducing the amateur, and thus popularizing photography. Had it not been for the dry plate, we would not have had the amateur, and if it were not for the latter where would photography be to-day?



"SNOW LIGHT," (Epping Forest.)

J. T. ASHBY, F.R.P.S.

PHOTOGRAPHY AND PATHOLOGY.

By W. PICKETT TURNER, M.D.



HOPE the fact will prove interesting that a knowledge of photography has assisted me in formulating a theory that has for its object the complete stamping out of that great scourge of humanity—consumption. In a work I have published upon the subject* I have endeavored to show that the whole of the tuberculosis in man is primarily derived from cattle, reaching man not by infection or heredity, but by the ingestion of tuberculous meat or milk. It will be obvious that to prevent the disease in man we must prevent it in cattle.

It is well-known that certain bacteria attack living plants as ergot attacks rye. The tubercle bacillus first attacks several species of grass. This, eaten by cattle, produces the disease in them—but only under certain conditions. If they are kept in ill-lighted buildings, sooner or later all develop the disease, but if they are tethered in the open, they are practically immune.

Hence the idea of the open air treatment which I shall proceed to show has nothing to do with the destruction of the bacillus and it is at this stage that photography comes in. It has been shown at the Lister Institute and elsewhere that if a ray of light be split up into its constituent parts by a prism and be thrown upon a colony of bacteria, it is only the ultra-violet rays that destroys the germs. Now as photographers, we know that it is these ultra-violet rays that impress our photographic plate and enable us to take a photograph. These rays are known as chemical rays, actinic rays, or actinism.

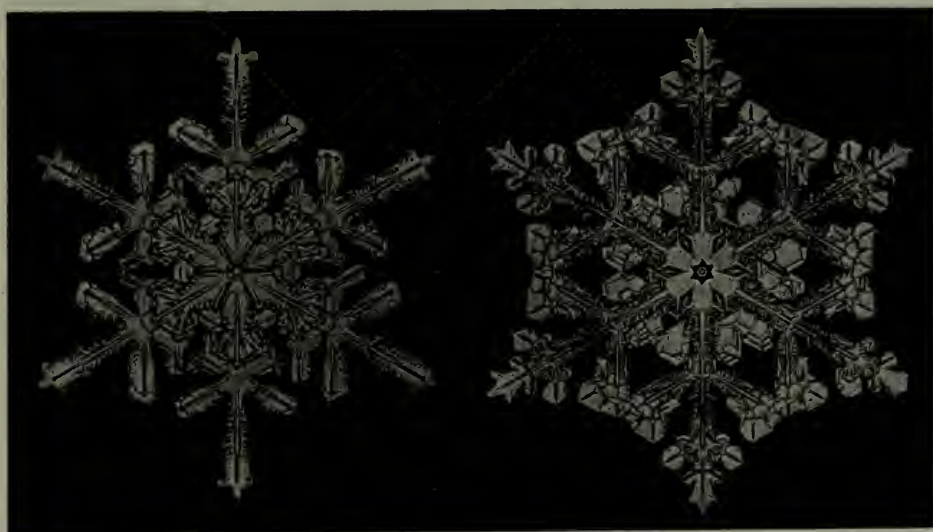
To prevent the bacillus from becoming pathogenic in cattle we must submit them to actinism; this, I think is best attained by placing them in buildings with glass roofs, especially as vertical light is more actinic than lateral light.

Should it be thought I have wandered somewhat from the point let me suggest that hitherto no photographic publication has had the opportunity of assisting in the stamping out of a disease that destroys annually 150,000 persons in the U. S.

* Tuberculosis, its origin and extinction. The Macmillan Co., 64 and 65 Fifth Avenue, New York. Adam & Charles Black. London.



W. M. Hollinger.



SNOW CRYSTALS.

WILSON A. BENTLEY.

SNOW, CLOUD AND FROST PHOTOGRAPHY.

By WILSON A. BENTLEY.

With Illustrations by the Author.



ONCE more a year has rolled around, each season bringing its own peculiar beauties and objects of interest for the camera of the alert and enthusiastic photographer.

To the writer, who lives in Northern Vermont, near neighbor to "Our Lady of the Snows," as Kipling has euphoniously termed Canada, the clouds of the Winter season, with their snowy treasures, bring that which appeals most strongly to our love of the beautiful in Nature, and our microscope and camera are always ready and waiting to picture and preserve some of this "beauty of the snows" in the photograph.

The Winter of 1907-1908, as was to be expected, was rather unfavorable, crystallographically considered. Yet the superfine character of the snows furnished by the few storms producing perfect snow crystals, made up in some degree for this paucity of numbers.



SNOW CRYSTALS.

WILSON A. BENTLEY.

Many of those secured were of the open branchy type, very elaborate in outline, and exquisitely beautiful. It sometimes happens that snow falls in small quantities from a clear sky. Such snow falls are of much interest, for many reasons.

One of this character occurred on December 4th, 1907. The snow fell scattering all day, from a cloudless sky, and furnished us a set of crystals of rare beauty and interest. Some of these may be seen among our illustrations.

Their relatively large size was remarkable in view of the fact that they grew in cloud-free air. Evidently there must have been a deep stratum of humid and nearly saturated air above our location at that time, wherein they grew while falling earthward. The storm of February 20th furnished crystals of even greater complexity of design.

FROST PHOTOGRAPHY.

Our photographs of window frost were few in number during the Winter. But an overflow of the running water in a cold back room filled the air therein with cold moisture and caused some remarkably perfect crystals of hoar frost to form upon glass slides and other objects placed therein, some of which we photographed.

Some of these hoar frost crystals almost rival snow crystals in symmetry of outline and design, and seem to demonstrate that it may yet be possible by artificial means, to bring the temperatures and humidities of the air within naturally cold

rooms to such a point, that crystals of hoar frost of wonderful beauty and symmetry of design will form upon glass slides and other objects therein.



SNOW CRYSTAL.

WILSON A. BENTLEY.

CLOUD PHOTOGRAPHY.

Cloud photography, as ordinarily conducted, is a very common pastime with photographers generally, now that we have color screens and orthochromatic plates and the beautiful and ever changing cloudscapes that pass across the skies, the panorama of cloudland are being pictured and preserved in the photograph. Yet more often such cloudscapes are taken with no definite end in view, except to perpetuate some cloud effect pleasing to the eye.

Those with a love for nature's secrets, those with a desire to increase the sum of human knowledge, should try to go further, to picture every kind and species of cloud, and especially to secure views showing the birth and development of shower clouds. The formation and growth of a large cumulus cloud, and its passing from a simple cumulus of mountainous

aspect, through the mushrooming stage and into a cumulonimbus, or rain cloud, crowned with a cirrus cloud crest, is a phenomenon of grand beauty and interest.

One can, if on the alert, occasionally view and photograph cloud scenes of this character during our Summer days. Photographs of such phenomena make not only superb cloud pictures, but possess a positive value from a meteorological standpoint.

Surely cloudland rarely furnishes us such superbly grand pictures, as are furnished by the towering alpinelike pinnacles of our thunder clouds, stretching grandly upward in seemingly solid array toward the blue sky, and buttressed from below by mighty piles of expanding vapor.

It certainly should be our endeavor to secure more photographic representations of that grandest of nature's spectacles, a forming thunder cloud.



"HUNGRY?"

H. B. CONVERS.



THE SPOTTED BLOUSE.

MISS HILDA STEVENSON.

PHOTOGRAPHING WATERFALLS.

By J. C. HEGARTY.



NATURE in perfecting this earth has filled it with pleasure and enjoyment for her people. And of all the wonderful works of nature none appeals so strongly to the lovers of the beautiful as a waterfall or cascade. They are nature's jewels scattered over the world, in settings beautiful and romantic.

What can be more picturesque than a cataract falling from a height and sparkling in the sunlight like hundreds of diamonds, with perhaps a rainbow of gorgeous tints gracefully arched in the spray, while a shimmering veil of mist rises from the foot of the falls and covers the dark background of rocks, making a picture no pen can describe.

No class of subjects quickens the artistic instinct of the amateur photographer so much or gives him such exquisite pleasure as a view of falling waters, no matter if it be the sublime beauty of Niagara or the quiet beauty of the little mountain brook as it tumbles down over the rocks a mass of foam and spray. To photograph this scene of enchanting loveliness and fix indelibly on paper this view so pleasing to the eye is ever the desire of the amateur, and to catch the spray and give the effect of motion is the height of his ambition. But how rarely do we find a photograph of a fall or cascade which is perfect, lacking so often in some particular part.

The majority of photographs of waterfalls or cascades which we see can be divided into two classes: the first, and by far the most numerous, have been given time exposure and the surrounding rocks and foliage are fully exposed and contain full detail, but the water which is the object of interest is nothing but white paper devoid of detail or the crispness so much to be desired in a view of this kind; and again the exposure may have been short but in the effort to get detail in the rocks and surroundings the development has been pushed to the utmost, blocking the highlights and covering the detail in the water—either method of procedure giving the same result.



THE OUTLET OF THE SPRING.

C. M. SHIPMAN.

The other class are instantaneous views in which the water is beautifully rendered with all the detail and crispness desired, but the rocks and trees come out on the print a solid black, devoid of detail, due to under-exposure.

It is obvious that neither of these photographs would be true to nature and are widely different in effect. The water may be beautifully shown as spray, but if no detail is to be seen in the surroundings it cannot be a pleasing picture, neither can it please the eye if the water has the appearance of cotton. The ideal photograph would be one containing the good qualities of both views above described; the rocks and foliage surrounding the falls with sufficient detail, and a beautiful crisp effect of the falling water, giving the idea of motion, with the delicate play of light and shade so beautiful in water. This ideal photograph can not be produced without an effort as it will be found that this work is the most difficult of all outdoor photography and requires good judgment, close attention to all details and careful patient work.

There are a number of methods whereby good results are obtained, differing widely, due necessarily to the existing conditions under which the exposure is made.

The falls which are to be photographed should be visited and carefully studied to determine the time when best lighted, the location from which to make the exposure and if the picture can be made with a rapid rectilinear lens or if it will be necessary to use a wide angle lens on account of a confined situation. Sometimes the only place from which a photograph could be made is too close for a rapid rectilinear lens, making it necessary to use a wide angle, but a wide angle lens should never be used unless it is absolutely necessary.

If the falls are so situated as to be well lighted at some time during the day the amateur will ascertain this time and come prepared to make the exposure. If the falling waters and surrounding rocks are well lighted by the sun the exposure should be made with the medium speed of the shutter, rapid enough to get some sparkle in the water and at the same time giving exposure enough to obtain some detail in the rocks.

The development of the exposure calls for considerable skill and no small amount of patience, the effort being made to obtain detail in the rocks without blocking up the high lights.

causing the water to look like a bunch of cotton devoid of relief or crispness.

The developer should be carefully compounded, the pyrostock solution having a liberal amount of sulphite of soda. Mix four ounces of developer using about three-fourths the amount of reducer required for a normal solution. Four ounces of the mixed developer should be diluted with twelve ounces of pure water and a sufficient quantity of this diluted solution flowed over the plate. After four or five minutes pour off and cover with a fresh portion, rocking the tray gently all the time. It may require several changes to properly develop the image, which should come up gradually and be clearly defined without violent contrasts.

A different method should be adopted if the falls are in a deep ravine or canyon where the direct rays of the sun do not illuminate the entire view or where the cataract is surrounded by trees unevenly lighted. For this class it is better to make a rapid exposure for the water and a time exposure for the surroundings, using two plates; then develop each plate carefully, the first to obtain detail in the water, using care not to get it too dense; the second for good detail in the surroundings. This necessitates double printing and the using of masks, but if carefully done, yields excellent results.

If it is desired to photograph falls of larger size, like Niagara, great care should be observed so as not to get overexposure. The water reflects a very large amount of actinic light hence it becomes necessary to make a rapid exposure and to use a diluted developer properly restrained. A cloudy day when the light is soft is preferable as the exposure can be more easily controlled. Good results have been obtained by local development, giving the plate a liberal exposure and using a developing solution somewhat diluted. Have convenient a strong solution of bromide and a soft camel's hair brush and, when the image begins to appear, paint the water portion with the bromide. This, if carefully done, will retard the water, allowing the developing solution to bring out the detail in the rocks without blocking up the water.

Sometimes regardless of the care exercised in developing, the negative will come out of the fixing bath too dense in the high lights or the part representing water. Recourse may then

be had to local reduction which will greatly improve the negative. First see that the negative is thoroughly soaked in water, then apply Farmer's solution with a soft brush to that portion of the negative to be reduced; watch the effect closely, washing under the tap to stop the reducer and using care to prevent the solution spreading over other parts of the negative which would likewise be reduced.

A careful worker will soon learn that the two things most essential to success are, first, a careful estimate of the exposure necessary; second, a developing solution adapted to the exposure and properly used. These are the points which it should be the aim of the amateur to get as near correct as possible. A correct exposure at the most suitable time, with a careful and intelligent development, should produce a negative without violent contrasts, but with sufficient detail and brilliancy to make a good print, clear glass in the deepest shadows and a range of tones through to the purest high lights with a good degree of intensity.

The use of orthochromatic plates is strongly advised as they give more correct color values than a plain plate and being more sensitive to green the surrounding foliage is better rendered. Concerning the developer to be used to bring out the latent image little need be said; pyro will probably be found the best as it is easily controlled. A combination of hydroquinone and eikonogen makes a very good developer, working energetically and producing negatives free from stain. The amateur will do well to use the developer which has proven the best in his hands, the writer preferring pyrosoda.

The earnest worker after the exercise of much care has produced a negative which bids fair to yield a fine print, the question then to be decided is the kind of paper most suitable to bring out the good qualities of the negative and give a pleasing print. Individual taste will be an element in deciding. The gaslight developing papers are well adapted for prints of falls and will give excellent results. Those having a velvet surface will yield fine prints and the matt surfaced papers will give beautiful results, but the papers having a very rough surface will yield fine prints and the matt surfaced papers will for a few negatives where the falls are veiled by rising mist



A MONARCH OF THE SEA.

Copyright: by C. F. King.

and the rocks partially obscured; the rough surface will add to the effect, particularly if the prints are of large size. Platinum paper commends itself to the amateur by its ease of working, fine velvety shadows, sparkling high lights and also on account of its permanency. But the negative for this process must be a first-class one, the paper not working well with a thin negative which with bromide paper would produce a good print. Prints on matt surfaced collodion paper toned to a brown will give to many such scenes a natural appearance, especially where the surrounding rocks are of a red or brown color, and when toned to a dark purple or black they are likewise pleasing.

The finest picture of all is a transparency; this process gives all the fine detail of the negative and brings out the half tones to perfection, giving crisp high lights and pure shadows. A fine transparency is a thing of beauty; there is no process which yields such perfect results as a positive on a slow plate, and if the best and most pleasing picture is desired the amateur is advised to use a transparency plate, develop with metol or hydroquinone and hang in a window where it will be well illuminated.

In conclusion the amateur is advised to study his view carefully and in photographing endeavor to get the expression of the scene; if it be shady, quiet, and restful, endeavor to convey that idea in your view; and if sunshiny and bright, give it a sparkling appearance in the print.

When making the exposure decide as to the result you desire, then work for that effect and if successful you will have a picture which will be a pleasure to study.



A FOREST PATH.

H. H. Brook.



"PATIENCE."

JAMES THOMSON.

TO THE BEGINNER IN PICTORIAL PHOTOGRAPHY.

By H. H. BROOK.

IT sometimes makes one wonder why so many start photography and get no further than taking the "View of the pier," or a "Snapshot of a friend." This kind of work is all very well in its way, but after a time it becomes very monotonous. If you take a photograph of a place of public interest, most likely in the next picture postcard shop you come to, you will be able to find a print of the same scene which is as good as your own and would cost you less to procure.

I suppose my reader has been looking at the pictures in this book, if so you will see that some are not sharply focused, others have the foreground sharp and the distance blurred. On studying the pictures still further, you will come to the conclusion that pictorial photography is a distinct branch of

photographic practice. The late A. Horsley Hinton describes it thus: "While employing the same methods and tools, it seeks to use photographic processes as a means of personal artistic expression." It uses natural compositions, clothing them with feeling and beauty. It has little regard for so-called technical perfection except as a means to an end; but still you must thoroughly master the technical side before you can produce anything of beauty.

To make pictures by whatever process you like you must be in complete sympathy with the subject or material in hand. Perhaps you notice the quiet beauty of an afterglow, the beautiful delicate clouds, the smooth sea with a sailing boat slowly moving on the calm waters. Now this is a splendid subject, and what a splendid picture it makes when the peacefulness of the scene is retained in the print. I venture to think a print of this kind will give you more pleasure than your former prints did.

Having said so much about the aims of the art, I will try to explain the making of the picture entitled, "A Forest Path." [This appears among the supplements in green tone. EDITOR.] I was walking in the dense wood when I came across the path. The composition was so strong that the first glance at the scene impressed me. The rough path with the roots of trees protruding above the surface seemed to offer material for a picture. I soon had tripod and camera adjusted, but it took some time to make the most of the scene. I exposed for the shadows and in development the plate was kept thin. From a proof I found that alteration was necessary in order to carry out my impressions. The enlargement on bromide paper was developed with a weak metol quinol developer. As soon as the image appeared the paper was transferred to clean water, and allowed to soak until development had practically ceased, then the paper was taken out and the image locally developed with a stronger developer, soaking the paper in water from time to time to prevent stains and markings. After fixing, those parts which had developed too dark were reduced by applying to them a weak Farmer's reducer. Above all, my reader should strive to cultivate a temperament which is both imaginative and artistic, seeking and finding the beauty in nature and depicting it in a feeling and graceful manner.



JOHN BEEBY.

LANDSCAPES.

By H. W. HALES.

ANY one can take landscapes," is a remark that is often heard among people who have had only a slight knowledge of photography and often also among those of more extended knowledge. It is also true that any one can take them after a fashion, but it is also true that the perfect landscape only comes once in a great while and this is when and only when the light conditions, exposure, and composition are just right. Who is there that in looking over a large stock of negatives has not often come across a perfect beauty in that line, but alas, it is only one out of perhaps some hundreds and it is often a puzzle to the novice why he does not get a larger percentage of these good ones.

There are many landscapes that are nearly always unsatisfactory no matter how or when they are taken and the serious worker had better avoid them entirely, as unless he is satisfied with mere matter of fact photography—and a real artist seldom is—he will derive no pleasure from them. To get the best out of any landscape and do it constantly—not only requires thought and care and a good knowledge of composition, light and shade, etc., but careful thought in using his instrument and in making the exposure. As a rule an under-exposed negative is absolutely worthless and it is better to over-expose rather than under. In working in glens or ravines always expose for the deepest shadows and never mind the high lights. Such views, however, should never be attempted with a brilliant sun streaming through the leaves of the trees. A partly cloudy day should always be chosen if possible and a time exposure given with the lens partially stopped down.

The use of the diaphragm in landscape work is one of the most important points to understand thoroughly in order to get the best results and the use to which the resulting picture is to be put will largely determine this. If the negative is to be used for lantern slide or stereoscopic work a negative that is absolutely sharp is preferable to any other; but if the camera is a large one and used for direct views only, a much more artistic effect can be had by having only the foreground or principal subject sharp and allowing the view to gradually fade off in the distance. In taking clouds (or landscapes in which they occur) very fine effects can often be had by taking them against the light, but the sun of course should be under a cloud or obscured so that it will not shine into the lens. There are many excellent books and papers on landscape photography and on this account it is not the writer's intention to write a long article. A few practical hints are often worth more to the worker than a long essay on any subject and it is for this reason these few lines have been written.



AN IRRIGATING CANAL, GRAND RIVER VALLEY, COLO.

GEORGE L. BEAM

ARCHITECTURAL PHOTOGRAPHY.

By EDGAR R. BULL.



O my mind this is one of the most fascinating branches of our art. For the photographer with a true appreciation of the beauties of line, light, and shade, there are in European cities many glorious examples of Gothic work; masterpieces of the architect's genius and skill, offering inexhaustible material for delineation by technical and pictorial expression.

Those wishing to produce serious work should study architecture, and learn the peculiarities of the styles of different periods, and in the results endeavor to give emphasis to the characteristics of each style.

A rigid camera should be used, with square or slightly tapered bellows, having a large range of movements, particularly the rising front; bearing in mind that it is always better to raise the lens than to make use of the swing back or front.

Too much attention cannot be given to the selection of the point of view; the experienced worker recognizes that this is necessary to do full justice to his subject.

Each picture should have, where possible, some point of dominant interest or emphasis, such as a beam or patch of sunlight, as a principal high light.

Vertical pictures usually give an appearance of height; very few subjects make a good horizontal print.

Lighting also is very important; from behind there is tendency to flatness; a good side lighting gives breadth; a front light is often effective. There is always a best time of day which will give the most satisfactory rendering. When possible, some time should be spent in the building and the effects noted previous to commencing work.

Purchase the best lenses you can afford, anastigmats by preference. If you only possess one, the most useful for interiors will be found of rather shorter focal length than the

longer way of the plate, for example, about 4 inches for $3\frac{1}{4} \times 4\frac{1}{4}$ plates, $5\frac{1}{2}$ inches for $6\frac{1}{2} \times 4\frac{3}{4}$ plates, etc.

If you are the fortunate possessor of a battery of lenses, bear in mind to always use the longest focus that will include the amount of subject required.

Avoid a dead on point of view or symmetrical arrangement, whether of a general view or a detail, and do not try to include too much subject on your negatives.

Arrange the subject on your focusing screen with the full aperture of lens, then stop down to requisite sharpness, and examine with a magnifier. Diffusion of focus is entirely out of place in this work.

The tripod should be rigid, and the points should be shod with india rubber or cork tips to prevent slipping on marble and polished floors. It should also be adjustable in height, for use on uneven ground, as a low point of view is generally the best, too high a tripod giving an unpleasant uphill appearance to the foreground.

The swing back should always be carefully levelled with a plumb or spirit level, thus preventing drunken or distorted lines.

Include a clear space of foreground when possible and where arches and columns are included, they should appear complete, and groining should not run out of the edge of the picture.

The lens cap should not fit too tightly, as it is often necessary to cap and uncap frequently, in such buildings as cathedrals where there are usually people moving about.

Where the exposure is prolonged, persons in dark clothing may be ignored, but if in light garments, will necessitate capping the lens, particularly so should the wearer pause in the front of a dark portion of the view.

Use a rapid plate, well backed. I personally prefer those listed as about H. & D. 200, as they tend to softer negatives than the slower brands.

The golden rule is to expose for the shadows. Under-exposure is useless in architectural work. Naturally exposures vary almost with every building but as a guide I have found working in fairly well lighted places, during the summer months, three minutes exposure with F22 about correct.

In development aim at delicate, soft negatives, with long range of gradation, which means that the developer should be weak in pyro and without bromide.

To avoid halation, use a well backed plate, give ample exposure. Use the full amount of accelerator to ensure rapid development, which should not be carried too far, stopping before the lower portions of the image are reduced.

Lastly, carry a note book in which write full particulars and conditions of each exposure, this will be found of inestimable value for future working under similar conditions. Remember that successful architectural photography requires stricter attention to technical details than almost any other branch.



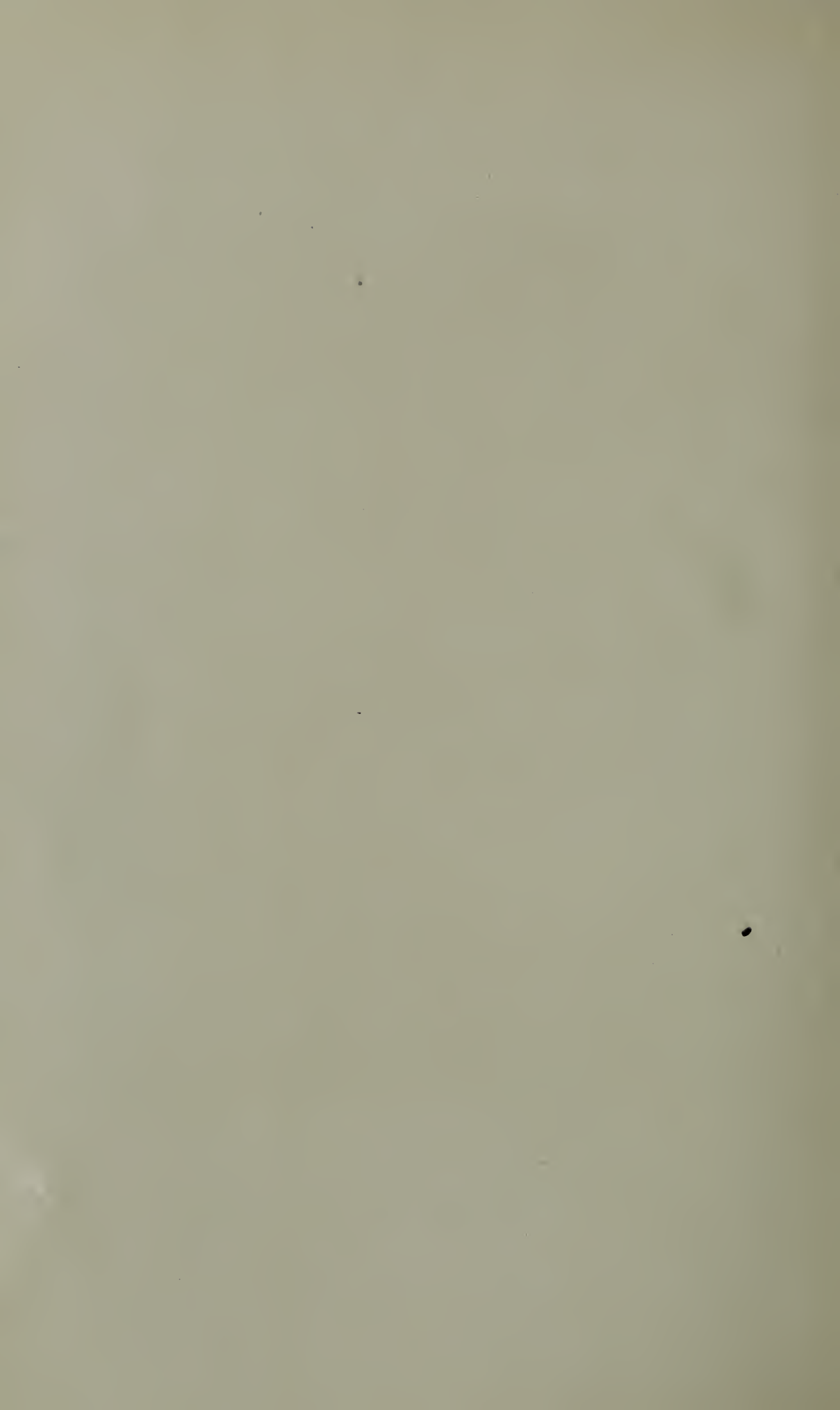
"FOUR COURTS," (Dublin.)

MRS. D. MAHONY.



THE FOUNTAIN.

Mathilde Weil.



BROMOIL PROCESS FOR PICTORIAL EXPRESSION.

By FRANK E. HUSON.



THE oil process pure and simple has within a very short time proved that we have arrived at a stage of possibility of control far in advance of the outlook at the time of the introduction of the gum process, and in the recent introduction of the bromoil process—a process in my opinion far more elastic yet more certain than direct oil—it seems that we have something giving the man with ideas almost unlimited scope in picture-making.

I have said that the bromoil process affords a still greater scope than oil. In my opinion bromoil is more sensitive to touch, it is easier to handle and pigments with a quick freshness that I have never succeeded in obtaining in direct oil; moreover we have the advantage of enlarging direct on to bromide paper and after preparation can pigment right away. For complete control we should make a bromide enlargement of rather flat style, full exposure and weak full development, else if we get our high lights white paper (and they may need modification) it is very difficult to persuade the pigment to adhere. I use a metol-quinol developer and a rough bromide paper for I find there is a tendency for the smoother kinds to blister under pigmenting. The brushes of the “stags-foot” type should be chosen and those made by Lechertier & Barb, of Paris, have proved excellent. Of inks, all those sold for the oil process are equally useful for bromoil.

There is an advantage in varying the original instructions for the process to the extent of bleaching and pigmenting and *afterwards* fixing. We can see the faint image better, and I fancy the pigmenting is a bit more subtle. Take the previously prepared bromide print and bleach in

Ozobrome stock solution	4 drams.
10% alum solution	4 “
10% citric acid solution	1 “
Water to	3 ozs.

Rinse and immerse in a ten per cent. sulphuric acid solution

for a few minutes or until the image shows a distinctly matte appearance. Having previously decided the mode of treatment and perhaps having a print as a guide by your side, soak a piece of blotting paper in water, and after removing all superfluous water place the bleached print thereon, mop print surface dry with a soft cloth and commence pigmenting. Do this in a bold style with quick but deliberate dabs, one or two will show how matters are likely to go and the picture may be built up as required. It must be borne in mind if it should be required to lighten a very heavy shadow, care must be taken to pigment gradually, as freshness is lost by taking off pigment to a considerable extent, although this is not of much moment except in those places which will take pigment with extreme readiness.

It will probably be found, if there are several high lights that require amending, they will force themselves while satisfactory work is being secured elsewhere; don't worry, get all you want besides the high lights and then with a smaller brush afterwards tone down obtrusive details. If the print will not take the pigment in its normal thickness, thin down with gold size, meglip, or Robertson's medium, but with the thinner ink there is a tendency to get coarse texture. The thicker the ink the finer will be the result. It may sometimes happen that sufficient depth of color cannot be obtained otherwise, but do not try to put a hard ink on to a previously distributed soft one. You can dry the print, rewet and add more pigment if you wish or when the print is dry it is possible to amend the high lights with a bit of india rubber. If you don't like the result you can wash off the pigment with petrol, wash, dry, rewet, and start again.

The print being pigmented satisfactorily, it should be fixed in a weak hypo bath and after a rinse can be dried, when it is complete.

The process seems long in the explanation, but in practice is delightfully simple and easy, you are almost sure to get some encouragement from your first attempt (which doesn't always happen in oil) and if you have a clear knowledge of what you want, you have the drawing and you can express your idea with ease. If you have not a clear notion of what you want, well, stick to photography, but even then don't offer it

as pictorial photography. If your aim is picture-making this process will assist and will show you the result of every modification as you proceed. Bear in mind the process is not a short cut to art, good photography must lead up to the preparation



A LONDON ALLEY (From a Bromoil Print.)

FRANK E. HUSON.

a satisfactory result; but the responsiveness of the medium is such that it is directly amenable to the hand, surely a more direct method of picture-making than the manipulation of negatives, the prints from which are admitted to be photographs. Reproduced herewith is a bromoil print of a London alley.



SPRINGTIME.

JOHN BEEBY.

ANIMATED PHOTOGRAPHY.

By ALFRED H. SAUNDERS.

IN looking through the various photographic papers, we wonder why there is such a dearth of news relating to the above. We question if there is a photographer anywhere, the wide world over, who has not seen or been interested in the exhibition of moving pictures. In this art there is everything to interest an ordinary photographer, both amateur and professional, in the course of his work. Every trick, idea, double printing devices, and all the various dodges so dear to the photographer's art, are fully exemplified and set forth therein. To the photographer who revels in spiritualism, here are shown spirit photographs galore, some of which if shown in a seance, would make the sitter's hair stand on end. Tricks such as the cart before the horse and pushing it backward, a knife cutting bread, a decanter pouring wine into a



WESTMINSTER BRIDGE (London).

MAX TOCH.

glass, without the aid of visible hands, and so on ad infinitum, all make a very interesting study as to how they are posed, and how, continuously, without a break, they run on the screen. Then again the trick films of the vanishing lady in a chariot and pair, fairies and witches going up in smoke, etc. Dante's *Inferno* is out-done in moving pictures. Again look at the beautiful scenery which is visited on an automobile, or railway train or trolley car, all instantaneously pictured in a reel of film. The everyday life of the people, is being photographed costumes and customs are being recorded and preserved for future reference, which may in two or three hundred years hence, be valuable assets, as showing what we folk of the present day are up to, and also as a record of the progress that can be made in a century or two. Wars are nothing to-day without the cinematographer being on hand, to record the various movements and maneuvers of the belligerents. The wonder to us is, how the man behind the camera gets into such scenes and comes out alive to tell the story in pictures. And so we might continue through page after page, telling the story of what this modern wizard is doing.

Science in all its varied branches is using cinematography for pathological studies and surgical operations. Microscopic work, zoology, and all the other ologies also fall in line.

In commercial life there is a demand springing up for the picturing of the whole process of manufacturing various goods, such as cotton spinning, sowing the seed, the progress of the cotton from the fields to the finished product; shoe-making in all its branches; the wrecking and rebuilding of hotels; the great engineering feats of the day, such as the picturing of the progress of the work in Panama; the habits of the workmen employed and the like.

Hunting scenes of both small and large game, even to the extent of bearding the lion in his den, all find work for some daring spirits, whose love of adventure and change carry them away. Leaving these idealities, and coming down to the darkroom we find the old manner of development completely revolutionized. It is a treat to visit some of the developing rooms where these films are handled, to see the great revolving drums with the exposed film placed on, then transferred to the water tank, revolving all the time, next to the developer

of varying degrees of strength. The washing, fixing and drying processes, these are all worth a visit of any photographer, who is at leisure and has the open sesame, and so on until it comes to the finished product in the ten cent or vaudeville theatre for the entertainment of thousands upon thousands in all parts of the globe.



O. C. CONKLING.

JOHN BEEBY.





"THE WAY OF THE TRANSGRESSOR IS HARD." THEO. EITEL.



THE STONE BRIDGE (*Kallitype Print*).

A. LEONARA KELLOGG.

THE KALLITYPE PROCESS.

By A. LEONARA KELLOGG.

THE Kallitype process has been so often and so thoroughly discussed that there remains but little if anything to be added. It is surprising that so few amateur photographers take up this interesting and inexpensive process, for there is no other which can so fully meet the requirements of intelligent and ambitious beginners. The instructions published in many photographic magazines seem to the uninitiated very complicated, while as a matter of fact the whole proceeding is simplicity itself.

Success lies in absolute cleanliness of graduates and trays, and through clearing, fixing, and washing of prints. The method of rolling with squeegee roller between clearing and fixing bath, also after fixing, should be strictly adhered to otherwise the iron salts will not be wholly removed and the prints when dry will show yellow streaks.

Prints upon different grades of paper though sensitized with the same solution never give exactly the same tone and it is this variety which lends spice and interest to Kallitype work.

It is a great advantage not to be confined to two or three grades of paper; any kind from a Japanese tissue to heavy rough drawing paper, in fact papers or cardboard which will not dissolve or crumble by the action of water may be sensitized; rough surface giving broad sketchy effects, smooth papers, fineness of detail. Negatives which make only ordinary prints on P.O.P. will give good results on Kallitype. Soft artistic prints can be obtained from harsh contrasty negatives, and those that are flat and seem only fit for the wastebbox can be made to give pleasing results simply by varying the proportions of the sensitizing and developing solutions.

I find no better or concise instructions in the Kallitype process than those given by Henry Hall in *The Photo-Miniature*, No. 47, and the formula by G. W. Frederick, M.D., in *The Camera*, May, 1903, and would advise beginners to obtain one or both of these and study carefully.



"AT HOME."

Copyright, 1906, by A. L. Kellogg.



A WINTER MORNING.

CLEO S. BOURGEOIS.



R. S. V. P.

William Gill.

ABOUT LANTERN SLIDES.

By RICHARD TROTTER JEFFCOTT.



MATEUR photography has so many followers that perhaps only a small proportion of the devotees ride the hobby to any great extent, especially the making of lantern slides. This branch appealed to me years ago for several reasons. First from a selfish motive it gave me a wide field wherein I could experiment to my heart's content, both as regarding apparatus and toward the end proclaiming individuality and expression. The chemical side was also absorbing, and the enormous field within one's grasp became appalling, for with developers, toners, and stains, one had at command never ending means of obtaining a variety of tone and color—all without hand coloring.

The second motive appealed just as strongly: the pleasure others derived in viewing the finished slides. It occurs to me that the only proper way to view photographic work is by the medium of the slide and the projection lantern. It may be a "one man show" or a club exhibit, yet in many places and by many people can your efforts be best shown and appreciated.

I have in mind a particular set of slides I made last winter and which were sent to a certain city in Ohio as a matter of courtesy. The gentlemen in charge of that particular club are a whole-hearted lot who opened wide their hall and invited the public to the "one man show."

The personal letters and the newspaper clippings that followed are carefully preserved, for the show was a success and the "second motive" proved correct.

I will grant you I have decided opinions regarding the making of slides as pertaining to each successive step from apparatus to the mode of finishing, yet I daily find new wrinkles and I hope benefit thereby. You will I trust forgive this pre-

lude yet the non-technical description that follows is really intended for your special benefit.

The question of special apparatus for making lantern slides should be considered but I have found the usual 5 x 7 View Camera the best for this work as it possesses a long draw, also a reversible back. Ordinarily the use of the regular holder and kits should be tabooed, as the time spent in obtaining the correct position and register, also the liability of the plate (L. S.) falling into the camera quite often, must be considered. You can obtain for about ten dollars a special L. S. back for your view camera, having ground glass focusing screen and special arrangements for the proper alignment of your subject, together with a double holder to retain $3\frac{1}{4} \times 4$ plates. All this is worth your best consideration if you take up the work seriously. Then again if you have lenses of various foci, they can be adapted to this camera which, having a draw of perhaps twenty inches, is sufficient for all needs. In the event that considerable copying must be done for contact slides an interchangeable holder can be used taking a quarter plate.

At present the means employed for holding the negatives are of a temporary nature but the idea has proved effective although possessing disadvantages. Probably my new scheme will be nearer my ideals but at this time it is not ready for use.

I first took a heavy picture frame having rabbeted opening 11×14 , placing in this aperture an 11×14 kit with 8×10 opening. I was enabled through the use of smaller kits to accommodate any negative from 8×10 to $3\frac{1}{4} \times 4\frac{1}{4}$, the frame being mounted perfectly upright on a sliding platform. The true position of the negative in connection with the ground glass focusing screen was readily adjusted on the screen as the "back" is furnished with an adjustable movement enabling one to correct distortion or irregularity in the original negatives.

Using a north light for my slide making (by reduction) I found that by covering a frame 18 inches by 18 inches (running in grooves) with Imperial tracing linen I had at once a soft and even light distributing surface, perfectly free from outside reflections as would occasionally occur if ground glass were employed for this purpose.

The accompanying cuts give a true idea of my equipment, which can be readily taken apart and stored away when not in

use. Two trestles about two feet wide and thirty-seven inches high supported the whole. On them is laid an eight foot board twelve inches wide, carefully "trued" and varnished. To one



5 x 7 View Camera, with Special Lantern Slide Attachment, Negative Holder, and Screen.



Rear view of Camera showing Lantern Slide Attachment and "Cradle."

face of the board is accurately laid out guides made of $\frac{3}{8}$ inch stuff for the purpose of guiding and maintaining the correct position of the "cradle" on which the camera is fastened, also lining the negative holder the cross guides control and screen.

This all may seem a lot of work yet when once finished it can be made ready for use so quickly and accurately that it is almost automatic in its working. The "cradle" carrying

the camera is of oak twenty-one inches long and about ten inches wide supplied with double and end brass guides $\frac{3}{16}$ inches square, which latter keep the camera in exact alignments at all times.

Having selected the negative from which to make your slide (remembering that your positive produces better results if not focused to fit the allotted size usually employed). Now with one or two movements of the "cradle" and then the camera focusing device the proper size of image can be readily determined on the ground glass, having previously arranged for all time by exact measurements that your image will be in proper register—provided that your guides, negative, lens, and ground glass are in correct alignment.

I use Hammer lantern slide plates exclusively and until I find something better will continue to do so. They readily give brilliant results irrespective of developer used. For years I have used the following formula with satisfying results, but the advent of Tabloid photo chemicals in this country has opened up an entirely new field, but of these a little later.

No. 1.—Hydrochinone	225 grains
Metabisulphite potassium	15 "
Bromide potassium	75 "
Hot water	30 ounces

No. 2.—Sulphite soda (dry)	2 ounces
Caustic soda	150 grains
Hot water	30 ounces

For use, take equal parts of Nos. 1 and 2 at 65° Fahr.

Use a good acid fixing bath and permit your slides to remain therein until they have fully cleared and hardened. Much depends on this latter as the terrific heat to which the dryplate slide is usually subjected in the electric lantern must be reckoned upon. For the elimination of hypo I employ my own idea of a washing box which is perhaps known, the same having been the subject of a special article recently published. For my work I had specially made a zinc box measuring $3\frac{1}{4}$ inches between the grooves and capable of holding 50 slides. The water flows in at the top and is carried off at the bottom, that is the outlet is "flush" with the bottom thereby insuring the prompt carrying off of the hypo. A wooden peg in the outlet controls the outflow, guaranteeing the proper covering of the plates at all times.

The next progressive step, provided one only desires a black toned slide is the mounting. This should never be attempted until the slide is "bone" dry. Carefully select your cover glass free from blemishes remembering that all scratches and imperfections are magnified many times on the screen and usually mar an otherwise fine slide.

My ideas in connection with the proper mat are very positive, and after experimenting with all makes have decided that "Olmsted Mats" can't be beaten for the purpose. In place of accepting the mask with a given cut out and a hideous gilt border, that persists in scattering the "gold dust" over your positive, you may obtain printed on a white face a series of lines indicating openings that can be used to suit your special requirements. Lay your mask on a table, place your unmounted slide thereon indicate the lines that may best control your "view" now with a mask knife and a piece of sheet zinc cut out the desired opening. I would add that this mask has a "Spot" printed on the face that indicates the proper placing of the finished slide in the carrier.

I have found it advantageous to cut the binding into two sizes a trifle larger each way than the size of your positive and then bind each side separately (first clamping your cover glass and positive securely), first the short ends then the longer sides. For keeping the gummed binding (cut as above) use tin boxes which will effectively exclude moisture and keep the binding pliable.

Now let us go a step backward and note a previous mention of the "Tabloid Photo Chemicals" and their adaptation to lantern slide work in particular. From the first I noted some decided advantages, which were indispensable in lantern slide work. Purity, economy, great range of adaptability and lastly in compact form, a special field for unique experiments as to tones and colors produced. From the list of articles manufactured I will select but a few and touch on each one slightly, for it has occurred to me that perhaps a special chapter on my experiments with these goods would be perhaps interesting.

Suppose I give you a list of my first selection of "Tabloid Chemicals." You can enlarge or reduce this selection as you may feel disposed: Rytol developer; sepia toner; copper ferricyanide toning; gold chloride and sulphocyanide com-

pound; chromium intensifier; and the following stains: Methylene blue, green dye, fuchsine methylene violet, Bismarck brown, eosin.

The rytol developer produced that ideal blue-black slide and was afterwards capable of producing the exact quality desired in a redeveloped or "built up slide" in connection with the chromium intensifier. I was congratulating myself on the result produced. I had a contact slide to make of a horse taken with special telephoto apparatus, and which, after repeated trials produced only an average slide. It occurred to me that after washing, to intensify with chromium and then redevelop. This I did and the comparison between the two slides produced a remarkable result. The use of the sepia toner was most interesting, producing a beautiful sepia tone, but a word of caution here—do not overdevelop your slide for the results are likely to be harsh and muddy as the "tone" slightly increases.

Experiments with the copper and gold toning produced delightful results, unique and handy in their application and without the trouble of having on hand a lot of chemicals but rarely used.

My greatest success lay in the results produced in connection with the stains, and further the experiments in connection seemed never ending. Having a number of negatives which would look best as "special results" I followed this idea using specially stained covers.

Taking a lot of spoiled slides free from scratches and blemishes I removed the image in a strong solution of hypo and ferricyanide. After a thorough washing which now cleared the gelatine slide, and while still wet, the slide was immersed in a weak solution of the particular stain until the desired density was obtained.

I found it advantageous before using from the stock bottle to make a certain proportion of the "dye" and water and would suggest one part of stain and three parts of water, except for the green stain, which should be one part stain and six parts water. By using special glass trays and wooden lifters for the purpose, one need not stain fingers or clothing. After desired depth of tone had been obtained, carefully rinse the slide under the tap and rack to dry.



DREAM DRAPERY.

WILLIAM H. ZERBE.



THE CUCKOO.

C. M. COOPER.



ADIRONDACK WOODS.

William T. Knox.



SPRINGTIME.

MRS. W. W. PEARCE.

WHAT NOT TO TAKE.

By W. N. HUTT.

THE title of this little article might suggest a dissertation on ethics. It is not intended to be anything of the sort, unless a few photographic "don'ts" may be taken as the negative ethics of photography. As a matter of fact the devotees of the camera, developing dish and printing frame, have very few of the common vices of mankind. There is no good photographer who is not a crank on water in the developer, and as for using "the weed," why "a light" in a darkroom would be as disastrous to photography as a fire in a powder magazine.

The art of photography—and it undoubtedly is an art—is picture making by elimination. The camera is like the great all-seeing eye; it takes in everything. A simple snap and everything in its range of vision is reproduced with a precision almost approaching the infinite. To our limited vision the de-

tails of foliage, etc., might appear to have been overlooked by the camera, but if a magnifier is applied to the film all details will be found reproduced there with marvelous fidelity. The artist with brush and pigment builds up his picture by constructive addition; the camera artist makes his by destructive subtraction. If the picture is in the background the photographer must make the camera give up its grasp on the foreground or the result is but a "record" and the real picture is



THE FLOCK.

C. F. CLARKE.

lost. Many a good picture is lost because of obtrusive details of rocks and weeds in the foreground. The photo mask and matt diffusive papers and the trimming board are eliminating tools, but the cutting and trimming process should begin when the artist under hood and cowl is looking "through a glass darkly" at an image upside down. More camera pictures are lost by having infinitely too much detail in them than from having too little. The watchword of the camera artist should be simplicity.

The best photographers are those who know what not to take; the men and women who can tramp over hill and dale

until the real picture is found. Trees and grass and crags and water do not necessarily make a picture. The beginner in photography almost invariably errs in making too many exposures. On a hunting trip his shutter will be flying at everything in sight. Later in looking over his trophies under the ruby light of the darkroom he finds more carrion than game. In looking over the prints of amateurs one finds more trash and wasted paper than anything else. There is usually not one



WOODLAND MIST.

W. T. KNOX.

picture in a hundred. As the poor woolly lambs fatten the bulls and bears of the stock exchange so the enthusiastic amateur photographer bolsters the camera market.

A good photographer searches with diligence until he finds the real materials that make a picture. He may not, the first time, get the picture; but he gets the idea, and his experience and imagination will tell him whether or not the psychological moment has come for bulb-pressing. If our ideal photographer is well endowed with this world's goods, and dry plates and printing paper are to him not expensive luxuries to be used in

moderation, he may make a preliminary exposure. If he is only a poor struggling taxpayer and the light is wrong, he simply blazes the discoverer's work of possession and goes off to claim that picture at a later date, when light and shade are more propitious. He avoids making exposures in the strong light of noon for it gives harsh high lights, spotty skies and dead expressionless shadows. He will make it a point to visit his chosen spot when he knows the light will fall upon it in a way to bring out its best pictorial values. If the subject is worthy of a good effort, it will pay to make an early morning expedition or when the softer lights of evening are shedding their mellowing haze over the landscape. The proper lighting of the subject has so much to do with the successful working out of any picture that attention to it is of primal importance in photography.

It takes great care to handle subjects in which there is a great deal of contrast. The old rule "Expose for the shadows and let the high lights take care of themselves" is not always the best advice. It is generally better, if possible, to avoid or tone down the high lights.

In handling subjects with a good deal of detail try to select a view point that will give the best perspective. Do not expose across the rows of trees, flowers, etc. It almost always gives a confused jumble. I saw a few days ago a whole field of cannas in bloom. Looking across the rows, the startling jumble of colors almost made one's head ache; looking down the perspective of the rows the forms and colors of the plants assorted themselves into a most harmonious effect.

The print here reproduced shows a view where with just a small snap Kodak the photographer eliminated enough to leave a pleasing picture. How little it often takes to make the best pictures! So many photographers try to get on one plate all out-of-doors. On a camera jaunt one often finds the materials for a good picture but the persons taken insist on having a favorite dog or cat "looking pretty." It takes tact sometimes to overcome such a situation and one may have to sacrifice a plate or two. Usually, though, a snap on an undrawn slide will satisfy them; when the subjects and their pets have ceased to pose the slide can be quietly withdrawn and the real picture obtained.



W. N. HUTT.



THE NANT FRANTON PASS, (North Wales.)

V. SERIN.

USE OF ORTHOCHROMATIC PLATES.

By V. SERIN.

IN writing this article I want it to be clearly understood that I speak from the personal and practical side and make no attempt from a scientific point of view as I am a great believer in the quotation "An ounce of practice is worth a ton of theory." It is often said that the use of an ortho plate and screen means the loss of all atmosphere that may be about when the picture is taken. Now from my own personal results I deny this and ask the following questions: (1) What plate did you use? (2) What screen? (3) Was the screen adjusted to plate? (4) What exposure? (5) Are you sure of the X or multiplying factor of your screen? (6) Have you tested this X factor? And on receiving the answers, I can generally point out where the cause of loss of atmosphere arises.



THE LONE SENTINEL.

MAXIMILIAN TOCH.

I will take the questions in order: (1) Any good make of ortho plate will do. (2) Here is where the first error may arise, *i.e.* an unsuitable screen; some of the screens seen in the stores are made of a brownish yellow glass and are for all practical purposes useless, increasing the exposure out of all proportion to the correction given and frequently wrongly correcting. The best screen consists of a piece of gelatine dyed in filter yellow K and then cemented between finest patent plate glass. (3) This is most important, as some makes of plates are more sensitive to certain colors than others and the screen ought to be adjusted to that sensitiveness. Still if you possess a screen which is of a bright lemon color or a bright yellow without any tendency to brownness, do not discard it as it will probably be satisfactory provided you test it properly and use it according to the results of your tests.

(4 and 5) These go together; the exposure given must not err on the side of under-exposure at all but a full exposure must always be given and it is only by knowing the X factor of your screen that you can give the proper exposure. An under-exposed ortho plate always tends to harshness and loss of atmosphere. (6) If you have not, I should advise doing so at once for this reason. When a screen is bought you are told that it is a so many times screen. No screen will work to the best advantage with the same X factor with all makes of plates, but the X factor will vary as to the increase or decrease required from the plate it was issued for. I submit a print to show how clouds and atmosphere are retained when the above advice is carried out.

I cannot say whether there is any advantage in a particular developer but after trying the majority I have decided to stick to the use of amidol.

To test a screen proceed as follows: Set up a sheet of white card in daylight and focus on same; fill a plateholder with plates you intend to use. Having ascertained by any means the correct exposure required, expose one plate on the sheet of card. Now put the screen on the lens and give the second plate various exposures by exposing portions only, these exposures bearing a direct increase to the one given without a screen. Develop the two plates in the same dish for the same time and fix; on comparing the two in daylight you ought to

find one patch on the screened plate equalling in density the other plates. This will give you the X factor of your screen as the increased exposure given to that portion is the X factor required. To test for color rendering expose a plate with the screen on, using a colored chart instead of the white card, giving the increased exposure as found above and on developing and taking a print compare the rendering of the blues, yellows, and greens with the chart and if same are satisfactory you can consider you have a good screen for the plate you are using.



"SALOME."

W. AND G. PARRISH.



THE SCENE PAINTER.

ARTHUR ELLIOTT.

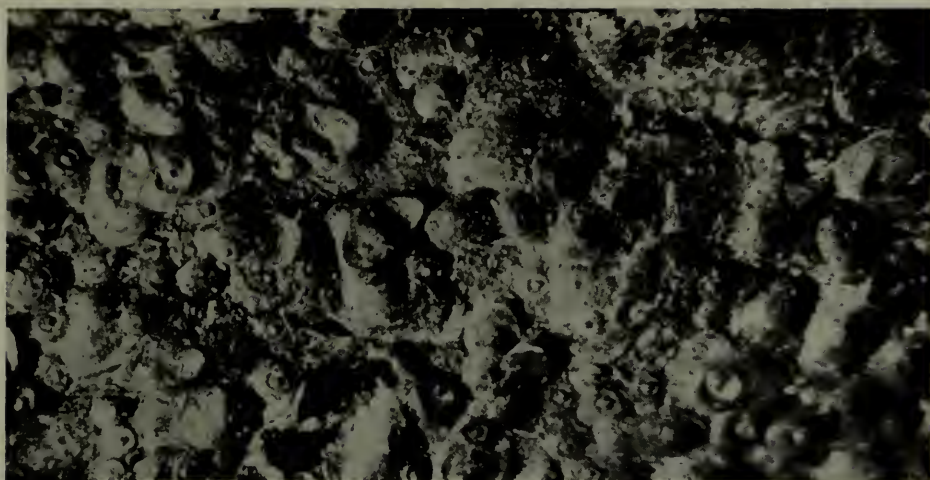


FIG. 3. SAN JOSE SCALE.

GEORGE RETTIG.

PHOTOMICROGRAPHS.

By GEORGE RETTIG.



THE making of photomicrographs always seemed such a great undertaking to me, as the directions given in the various articles I have read on the subject required such an elaborate collection of focusing and lighting arrangements, that I never had the courage to try until a friend suggested removing the objective from the microscope and placing it (the objective) in the front board of the camera and letting the sun shine directly upon the object to be photographed. For the low power work this method is very satisfactory.

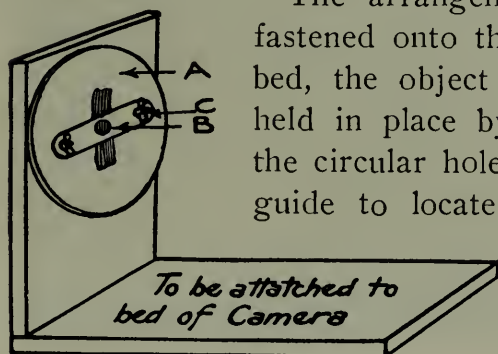


FIG. 1.

The arrangement shown in Fig. 1, is fastened onto the under side of the camera bed, the object to be photographed being held in place by the thin metal strip "B," the circular hole in the center being a good guide to locate the portion of the object desired. Two thumb screws "C" are used in fastening the object to the circular board "A" which

may be revolved to secure different lighting effects.

The San Jose scale, Fig. 3, appears like fine sand to the unaided eye, and was photographed by this method. The negative was made at 11 A. M., July 15th. Camera extension 16 inches; exposure in direct sunlight 40 seconds on Seed's No. 27 plate.

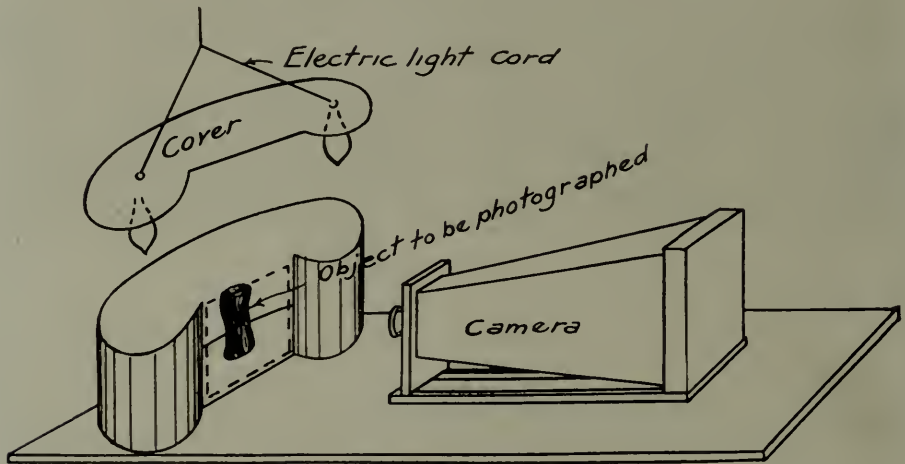


FIG. 2.

Figure 2, shows what might be called a miniature studio with the cover raised, which I find very convenient in my work with the Forestry Department of the City of Cleveland. The object to be photographed is placed in the box, the cover lowered, and it is then lighted by the two 32 candle power incandescent lamps, the front side of the box being so arranged that the light can shine directly upon the subject, but not into the lens. Frail leaves may be fastened to a sheet of glass, the background showing through this support. This arrangement requires an exposure of about ten seconds, using stop f8, and a rapid plate.

For lantern slides by reduction, the negative is placed at the front edge of the box as shown by dotted lines, and then photographed onto the lantern slide in the usual manner.



EARLY MORNING.

D. H. BROOKINS.

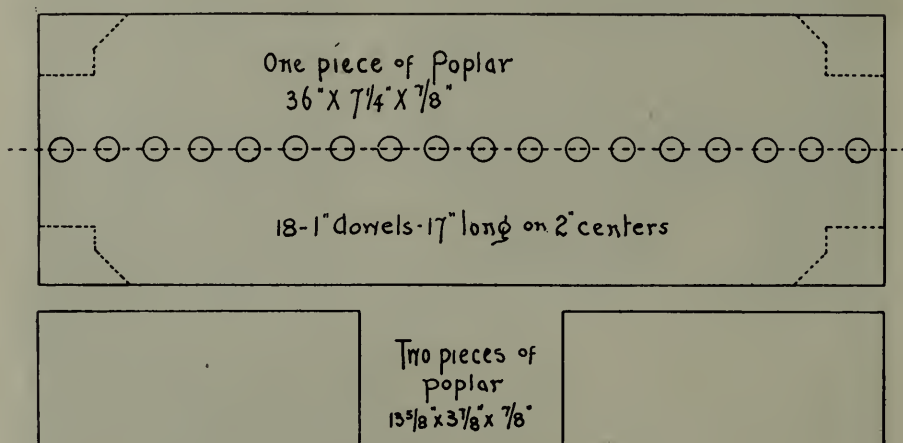
THE WORK BENCH AND THE SINK.

By RICHARD TROTTER JEFFCOTT.



SOME years since when I fitted up my present work-room (8 x 8 feet) I had at least a definite plan regarding some of the details, while other portions were left for future consideration. My first needs were a work bench and sink.

It occurred to me that the largest sink I could conveniently use would be none too large for my use, so in following that idea I purchased a white porcelain lined one 36 x 18 x 6 inches and after placing it in position figured on a work bench to be placed thereon. I selected a sink of the above character, be-



cause it would wear longest, could be easily kept clean, and the staining from various chemicals was not objectionable.

The planning of a work bench required some thought, and now after years of use the one made at the time has proven its value and use, and further were I to build another dark-room, I would follow the same lines.

The accompanying drawings and description give a fair idea of my bench.

Unless you are handy with tools, it is best that you have a mill make it up for you or at least cut out the material and put it together yourself.

I will take it for granted you are a home carpenter, and will ask you to proceed as follows. First select a piece of poplar $7\frac{1}{4} \times 36 \times \frac{7}{8}$ inches, draw a line (lengthwise) through this piece and measuring back one and one-eighth inches from each end, mark on the line spaces two inches apart. Now with one inch bit bore 18 holes. Then with your rip saw follow your original line halving your piece of poplar, when this is finished you have your front and back frame for your bench. Before leaving these cut each end as indicated by dotted lines $2\frac{1}{2}$ inches from top and in $2\frac{1}{2}$ inches, then follow angular cut, this for removing bench when necessary. Next furnish two pieces of poplar $3\frac{7}{8} \times 13\frac{5}{8} \times \frac{7}{8}$ inches. Frame these ends to the front and back pieces bring them flush at the top. These should recede $1\frac{1}{2}$ inches from each end.

Now procure 18 one inch dowels, 17 inches long, permit them to project $\frac{7}{8}$ inch outside the frame and nail securely to the half-round openings and your job is complete. Paint the bench with two or three coats of Asphaltum varnish. The second after the first is entirely dry, this renders it waterproof.

The advantage this bench possesses over any wire or slat arrangement can be readily seen as all the waste water and slop readily runs off, and graduates, funnels and trays (inverted) can be readily drained.



OFF THE SCILLY ISLES.

C. J. KING.



THE DITCH.

H. E. POWELL HIGGINS.

SNOW PICTURES.

By H. E. POWELL HIGGINS.



HE snow! When it comes, "Stand not upon the order of your going, but go." Such advice may not be so necessary in America, but in Britain it is a *sine qua non*. No student of weather there need grumble at monotony. Versatility is the order of the day.

It was but a short time since that I had the pleasure of twenty miles tramp with camera, pipe, and dog through snow-carpeted lanes and unsullied stretches of dormant fields.

Take your dog by all means. He will enjoy it, and afford you welcome companionship. At least he will take an intelligent interest in your operations. He will not plant a camera in exactly the same spot, and duplicate a theme you have, mayhap, pondered over for months. He will not require directions as to relative exposure and other irritating minutiae. As Kipling would say: "He's a darlin', he's a daisy, he's a duck." At any rate he is a foreground, figure study, and friend.

I have no wish to discount the advisability of human company, but if the reader considers for a moment, he will, I think, arrive at the inevitable "cul de sac," that all or most of his best "motifs" were worked out when he assumed the majestic and became monarch of all he surveyed. After all it is an individual question, but if a fellow photographer be taken, see that you are both "ad idem."



A CAPE MALAY LAUNDRY.

Mrs. Caleb Keene.



THE BARN.

H. E. POWELL HIGGINS.

By this time, I am well on my journey. The last monuments of an effete civilization, the final perpetrations of the jerrybuilder, are dead astern, and the hand of man troubles no more. The next town is four miles by road, and this distance can be judiciously doubled by taking "short cuts" or field paths, which ramble on as innocent of destination as an errand boy.

It makes marvellous changes, does this snow. Many a time and oft, have I passed yon ditch in "childing autumn," but never till now has its beauty become so apparent. It always was an old-fashioned, wayward, little ditch, but in its new ermine robe, dignity is assumed, and it emulates a hillside. I wish I could have done more justice to the crisp snow, thick set hedge, and gray sky, but the camera sketch is a note which manages to touch a sympathetic chord, as reminiscent of a delightful day.

The world is in monochrome when under its fleecy white mantle, and there I think must rest some of the charm of portrayal. The luscious black, gradated white and gray are pre-eminently suited for æsthetic studies of this kind; the inadequacy of one color is not so apparent, or rather, monochromatic charms are more in evidence. When the trees are



TREES AND RICKS.

H. E. POWELL HIGGINS.

bowed down with the oppressive grace of deep-charged snow, then is the time, Ruskin remarks, to practise the placing of masses. Nature has eliminated irritating detail and sketched the country side in a broad mass of beautiful lines. The veriest tyro has a picture prepared for him. "I have completed this picture for you," says Nature, "take it"; and she patiently holds it out in her right hand, ready for he who will but grasp the prize.

The snow was heavy walking and the field large. But the barns had attracted me from afar, and the nearer I got, the more enamored I became. The roofs were in downy white against a leaden sky; here and there sparse trees broke the monotony with their delicate tracery. The snow had made a picture. By dint of an "S curve" walk to the gate and back, I completed the composition, while the dog intelligently scattered dainty footmarks to relieve an expanse of white. He then retired, knowing a figure foreground was not necessary, and I made the exposure.

And what of the distant ricks and elm trees? Ah, yes, very fine indeed, but after lunch. Here is the "Barley Mow"; snow laden air is appetising sauce. Come along dog!



PEACE

H. A. BEASLEY.



THE RIVER LLUGWY, (North Wales.)

J. T. ASHBY, F.R.P.S.

THERMO DEVELOPMENT.

By ALFRED WATKINS.

DEVELOPMENT by time appears to have originated with Hurter and Driffeld about 1890. They pointed out that a given developer at a stated temperature would always give a standard degree of contrast in a negative (between similar tones, whatever the subject) in a stated time, but that this time would have to be varied if the temperature varied. They did nothing, however, to tabulate the variations of time caused by varying temperatures.

A French investigator, Houdaille, appears to have been the first to have followed up this point, and in 1903 he pointed out that with a certain developer a variation in temperature of one degree Cent. means a variation of five per cent. in the appearance of the image and total duration of development, this applying from 10 deg. Cent to 25 deg. Cent.

In 1905 Ferguson and Howard published further investigations on this point and gave the data for constructing a table of times for different temperatures. Mr. Ferguson published a further paper in the *Photographic Journal* for May, 1906, giving a more simple formula. He there points out that with a certain developer the variations of time for one deg. Cent. can be found by multiplying the shorter time by a temperature coefficient of 1.05, (this by the way, is identical with the five per cent. of Houdaille). To get the increase in time for a drop in temperature of two deg. Cent. the shorter time must be multiplied by $(1.05)^2$; for three degrees lower temperature, by $(1.05)^3$, and so on.

The temperature coefficient varies with different developers, and is usually given for a variation of ten deg. Cent. instead of for one degree, hydroquinone being about 2.8 and metol about 1.25.

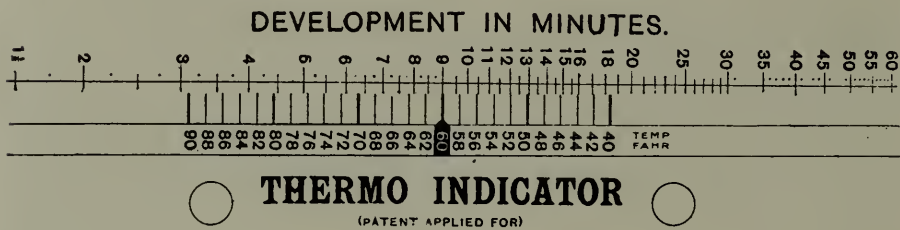
Within the past two years several tables of times of development for different temperatures have been published on both sides of the Atlantic; but they obviously can only be correct for a stated plate or film and a stated developer. To compile such a table, Mr. Ferguson's formula can be used, but it involves making a separate calculation for each degree of temperature.

I have discovered that Mr. Ferguson's formula can be put in the form of a slide rule, and this, in practice, is far more convenient than a mere table, as it is applicable to any plate (the time of development varies with different brands), and saves all calculation both in compilation and use.

The slide rule for a particular developer can be constructed when the temperature coefficient is known, and this is most conveniently ascertained by making an observation of the time of appearance of a certain exposure at two temperatures a considerable distance apart; for the time of appearance has been found by experimenting to indicate the correct variation of development time for varying temperatures.

A logarithmic scale (the upper one in Fig. 1) is taken, and the distance apart of the two times of appearance marked off on the edge of a strip of paper. This distance is divided into the same numbers of equal parts as the difference of the temperatures. Thus, if one trial is at 50 degrees and the other at 68

degrees, and the times of appearance 40 and 22 seconds, the distance between 40 and 22 on the logarithmic scale is divided into 18 equal parts, and the equal divisions extended for other temperatures. In this way a slide rule as shown in Fig. 1 is formed, although in practice the division into equal parts is



made by a fan-shaped diagram of converging lines. Such a slide rule only applies to a developer of a particular temperature coefficient, although my form constructs an adjustable thermo calculator adjustable for any temperature coefficient.

Personally, I consider that the most useful and practical application of this thermo scale is to print the logarithmic scale on the label of the bottle containing the developer; and the temperature scale on a thick paper slip encircling the bottle and revolvable about it. This is illustrated in Fig 2, and is already on the market in England. It will shortly be available in the United States through Burke & James. But temperature is not the only influence which causes a variation in the time of development, for some plates develop quickly and others slowly, even with the same developer—as all practical workers know. In devising a complete system of indicating the time of development, I have therefore found it necessary to give the development speed of the plate. This I do by classifying plates into seven groups indicated by letters based on the words quick and slow, as under :



DEVELOPMENT SPEEDS.						
VQ	Q	MQ	M	MS	S	VS
2¼	3	4	5¼	7	9	11½

All plates are assigned on a speed list to one of these groups. The times indicated in these groups are for a standard con-

trast of gamma 1, at a temperature of 60 degrees, and are not given as final for different batches of most brands of plates vary in development speed. To use the scale on a bottle the black pointer at 60 degrees is set to the time suggested on the speed list, and then against the real temperature of the developing room the time for development at that temperature can be read.

Thermo development has the advantage that a darkroom light is not needed. The room should be in complete darkness and, when the developer is poured on the plate and the dish covered, the light can be turned up.

The new method must not be compared with my earlier method—Factorial Development, which also aimed at making allowance for temperature, not by observing a thermometer, but by using the time of appearance of the image as a gauge of the energy of the developer.



GEORGE L. BEAM.

PREHISTORIC PICTOGRAPHS AT THE CLIFF RUIN OF TSANKAWI,
NEW MEXICO.



HAROLD SPEED.

E. O. HOPPÉ, F. R. P. S.



THE GARDEN OF ALLAH.

Louis J. Steele.

A SIMPLE AND ACCURATE SHUTTER-TESTING APPLIANCE.

By A. LOCKETT.



CORRECT exposure is of primary importance in successful photography. The modern dryplate allows a wonderful degree of latitude, but there are certain limits which may not be overstepped. In all instantaneous exposures the worker is practically at the mercy of his shutter. If this is working anywhere near the indicated speeds, the exposure will be something like what was intended; but, far more often than not, the actual speed seriously differs from the reputed. It is no exaggeration to say that a very large number of negatives are over- or under-exposed from this cause alone. A simple, accurate, and inexpensive arrangement by which the photog-

rapher can ascertain the real speeds of his shutter, may, therefore, prove acceptable to many.

The method now to be described is not intended to compete with the more scientific means of shutter-testing which involve the employment of elaborate apparatus. It is merely a simple and convenient contrivance made with but a trifling expenditure of time or trouble, but quite accurate when properly handled, and well suited for amateur use. It depends in principle upon the fact that if the bob of a pendulum is caused to swing round horizontally in a circle, instead of to and fro as usual, the speed of revolution will be prac-

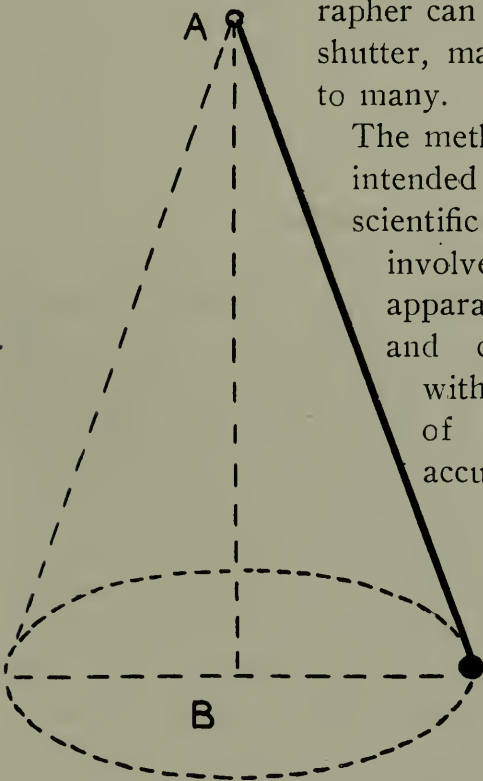


FIG. 1.

tically constant throughout, and will depend only, with a pendulum of given length, upon the diameter of the circle de-

scribed. In other words, the pendulum describes an imaginary cone, (see Fig. 1) the apex A of which is the point of suspension; while the time occupied by one revolution is exactly twice that of an ordinary pendulum whose length is equal to the height AB of the aforesaid cone. The only difficulty in using such a pendulum is that it requires a little care to start it revolving properly, and that the diameter of the circle described tends to diminish very soon from the effect of gravity, which pulls the bob towards the center and gradually overcomes the centrifugal force.

A circular pendulum to make a revolution lasting two seconds may be constructed as follows: Obtain three medium-sized needles, some strong thread, and a small spherical leaden weight, about half-inch in diameter, with a hole through the center; this may be covered with bright lead foil, obtained from a cocoa packet and glued on. Attach the thread to the leaden ball, by passing it

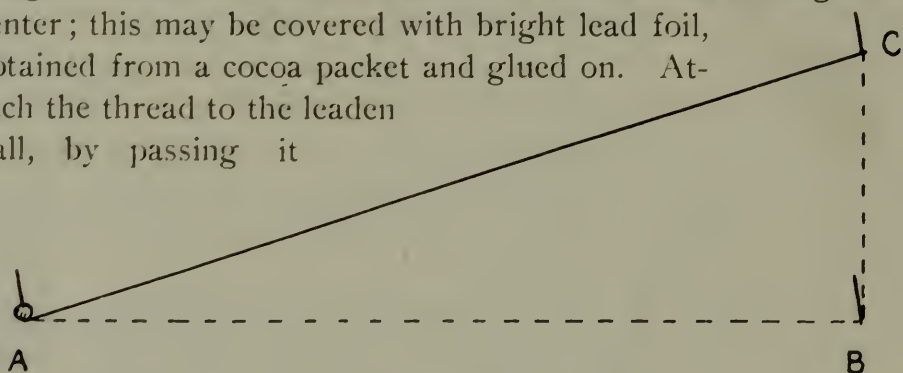
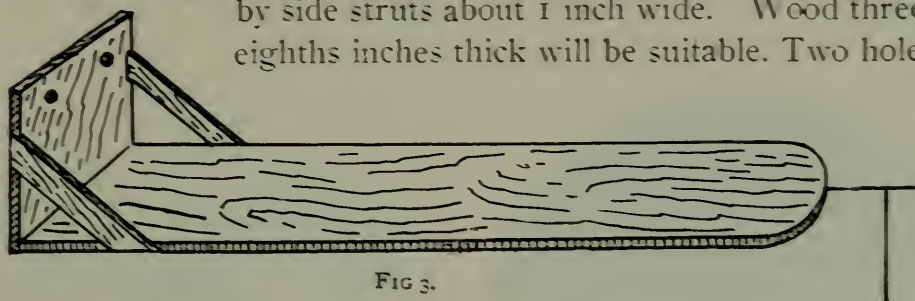


FIG. 2.

through the hole and making a knot sufficiently large to prevent the ball slipping off. Now stick one of the needles A (Fig. 2) in an upright position at one end of a large table, and slip the ball over it, knot uppermost. Measure exactly $39 \frac{1}{5}$ inches from A, and stick in another needle B at the point so obtained, passing the thread temporarily round this. We must now decide on the diameter we wish the circle to be, in which the pendulum is to revolve. Two feet will be found a convenient size; so we measure off half this = 1 foot, from the second needle, at a right angle to the line AB, and stick in a third needle C at this point. The correct length for the required pendulum is the distance AC. Remove the thread from B and pass it round C, pulling it just taut and tying it twice. Cut off the surplus thread nearly up to the needle and pull the latter out of the table with the thread fastened to it.

Then lift the ball off the needle A and the pendulum is complete, except for the means of suspension.

This consists of an L-shaped fitting, made as shown by Fig. 3, the projecting portion being about 2 feet long and 4 inches wide. The short arm nailed to the back at a right angle is 4 inches by 3 inches, and is strengthened by side struts about 1 inch wide. Wood three-eighths inches thick will be suitable. Two holes



are bored in the short arm, by which the bracket can be hung from a couple of nails driven into a wall. The tied portion of the thread is now slipped further towards the eye end of the needle, and the latter is stuck by the point into the free end of the wooden bracket:

The camera will require to point downwards, so that a tilting board is necessary, unless a mirror-box or a reversing prism is available. A fixed tilting board is easily made by nailing two square pieces of wood together at a right angle, with struts at each side: at one side is bored a hole for the camera screw, while the other side is clamped to the tripod top.

Now cut a circle of cardboard covered with dull black paper or painted black, exactly 2 feet in diameter, and in the center glue a small silvered spangle or a bright steel bead, as in Fig. 4. Cut also a circle of white cardboard, about 2 feet, 3 inches in diameter. Divide this carefully into one hundred equal radial parts, by lines from the center, making a numbered scale round the margin to correspond, as shown by Fig. 5. To make the center distinct, stick a circle of black paper about $3\frac{1}{2}$ inches in diameter exactly over the middle, and in the center of this fasten a circle of white paper $\frac{3}{8}$ inch in diameter. Expose a plate on this divided circle, aiming to obtain a clear, sharp negative, which is to be used later on as a scale for measuring the test photographs of the revolving pendulum.

The pendulum is started by gently swaying the top of the thread, just below the needle, in a circular direction with the forefinger, taking care rather to guide it into rotation than to push or swing it. After a few attempts, it will be found possible to make the bob revolve in a practically perfect circle, the finger being then cautiously withdrawn. The bob of the pendulum should be almost touching the ground when at rest.



FIG. 4.

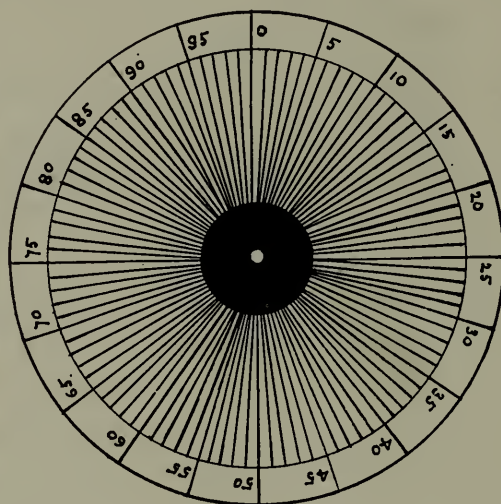


FIG. 5.

To make a test, on a bright sunny day erect the pendulum at a place where direct sunshine is falling on the ground. Place the black circle centrally under the bob, and carefully start the pendulum in a circular revolution greater than the diameter of the black card; the camera having been previously focused on the latter, as shown by Fig. 6, a plate inserted, and the shutter set. Directly the bright bob of the pendulum begins to contract its circular course, and is seen, when looking down on it, to be revolving exactly over the edge of the black circle, the shutter is snapped.

On development, a negative something like Fig. 7 should be obtained. The dot C is, of course, the center of the circle, while the blurred curve AB shows the course of the pendulum bob during the time the shutter was open. The negative, when dry, is laid against the negative of the divided dial, with the two centers coinciding. It will then be seen at a glance what proportion the blurred curve bears to the whole circumference

of the circle. Thus, supposing the curve extends between the lines 0 and 10, the speed of the shutter was evidently $10/100$ of 2 seconds $\equiv 1/5$ second. Or, again, if the curve should extend from 0 to 4, the speed was $4/100$ of 2 seconds, $\equiv 2/25$ seconds.

Sometimes, but not necessarily always, the curve will be perceptibly less dense at the beginning and end. The proportion these fainter parts bear to the whole of the curve will

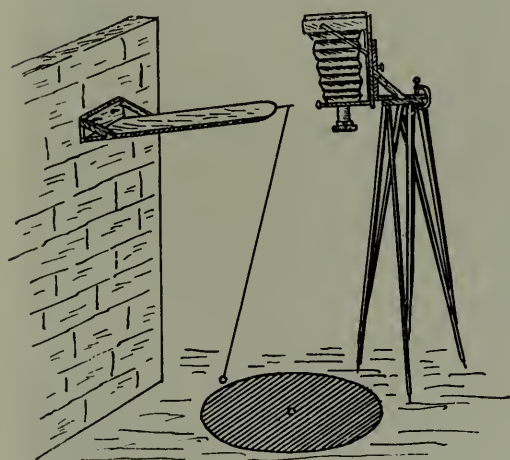


FIG. 6.

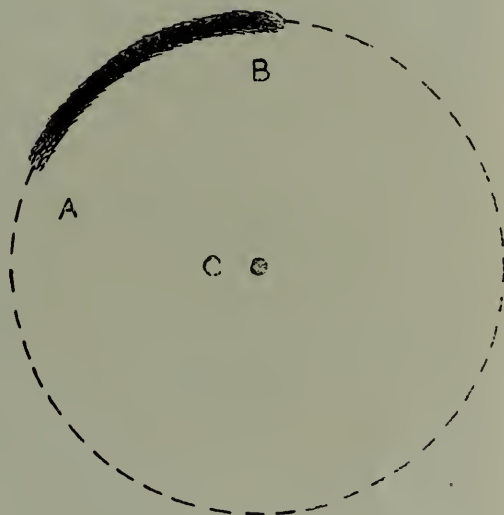


FIG. 7.

enable an idea of the shutter efficiency to be obtained—that is to say, for how long a time the lens was fully uncovered during the exposure. Two shutters working at exactly the same speed may have totally different efficiencies.

It will be noted that the dial described does not provide for exposures below $1/50$ second. This will be sufficient for most practical purposes. But if it is desired to test quicker exposures, the dial should be divided into a larger number of parts. The bob of the pendulum is, in that case, blackened, and only a small circular portion silvered round the center, where the thread passes through. The small silvered circle must not exceed the width of one of the dial divisions in diameter. A pendulum to revolve once per second is not so convenient as that described, on account of its much shorter length, and consequently smaller circle of revolution, also it is not so easy to make it revolve satisfactorily.



LANDSCAPE (from a gum print).

FEDORA E. D. BROWN.



WILLIAM GILL.



THE MONTEREY COAST (California)

W. E. DASSONVILLE.



SHADES OF AUTUMN.

W. E. Bertling.



HOMEWARD.

J. H. FIELD.

DARKROOM CONVENIENCES.

By H. F. PERKINS.

A DRY PLATE CUTTING BOARD.

IF one is of an economical turn of mind, either naturally or by training and of necessity, one frequently finds it convenient to use plates of smaller size than any that happen to be on hand. Making landscape negatives on very small plates contained in kits in the large plateholder is a most admirable practice. It tends to give better composition and lessens distortion, producing the same effect as the use of an exceedingly long-focus lens. These small plates are usually secured by cutting down large sizes, for economy's sake.

Again, the expensive Autochrome plates can scarcely be carried in stock in a large variety of sizes, so it is best to get the largest size needed, and cut these down in the darkroom by means of a gauge-board and diamond, whenever a smaller size is required.

In order to facilitate cutting plates in the darkroom, and to lessen the number of plates spoiled by uneven cutting, I have made use of the following device which proves entirely adequate.

My print trimming board is fitted with a pair of heavy cleats on the bottom, to prevent warping. A brass track, simply a strip with edges beveled inward, is screwed to the edge of the board next the end to which the scale in inches is usually



LEAFY JUNE.

A. W. WALBURN.

fastened. A brass block was made, grooved to receive the track, with a set-screw to fasten it at any point of the track, and to it is hinged a ruler, which lies on the board parallel with the cutting edge and knife. The ruler is lined, underneath, with felt.

The set-screw may be made fast at any distance from the right hand edge of the board, the ruler raised on its hinge, a plate placed in the upper right hand corner of the board, and the diamond or rotary cutter drawn along the edge of the

ruler in the dark with very little chance of error. The film side of the plate goes down, protected by a sheet of paper laid on the board. After the scratch has been made, the plate is broken along that line by laying it on the edge of the board, the scratch just following the edge, and by gentle pressure broken so that the film will remain intact. A quick fold in the opposite direction completes the job.

The steel rotary cutters which carry six cutters—magazine cutters they might be called, are just as good a tool as one can desire. As soon as a disk gets dull, throw it away and begin on a fresh one.

GRADUATE AND FUNNEL RACK.

Buy some japanned wire coat hooks—the kind with a long hook above and a short one below, and one end of the wire cut in a screw thread to make it easy to screw into a wall. With two pairs of strong pincers bend the hooks so that they make a letter U with the ends curved slightly toward one another. Cover the wire with pieces of rubber tubing, long enough to protect the ends. Half a dozen of these may be made in a few minutes, the arms spread more in some, to accommodate larger graduates, the various sizes being made to fit particular graduates. For funnels, the ends of the U are bent around until they meet, making an O. The holders are then screwed, in graded series, into the edge of a shelf or the wall close to the developing sink, and you have a cheap and convenient graduate and funnel rack, and you will smash less glassware by reaching after it in the dark.

A CHUNK OF PARAFFIN.

This homely remedy will be found a reliable cure for a number of darkroom ills.

(a.) To mark plateholders. A little cube of paraffin should be kept hanging by a string in a convenient place in the darkroom. When loading plateholders, if more than one brand of plate is loaded, or more than one size, mark the dark slide on both sides with the paraffin. The mark is quickly made, will not come off accidentally, but is instantly erased by rubbing the slide with the finger or handkerchief. A piece of the same material in the pocket

enables the particular worker to mark his plateholder with useful data at the time of making the exposure. Although the legend is in colorless medium, it is nevertheless easy to read, even in the darkroom.

(b.) To protect the fingers. Rub the fingers and nails with paraffin before beginning development, and pyro stains or metol poisoning will not annoy you.

(c.) To prevent glass stoppers from sticking. Rub the stopper with paraffin—it will not rub off, form a greasy film on the solution, nor amalgamate into a cement in the presence of alkalies.



AT THE HOME OF HIS FOREFATHERS.

Copyright 1907, by George L. Beam.



THE FISHERMAN.

D. H. BROOKINS.



AN OCTOBER MORNING.

D. H. BROOKINS.



SUPPERTIME

HELEN W. COOKE.

VIEWING THE IMAGE ON THE FOCUS- ING SCREEN RIGHT SIDE UP.

By CLEO S. BOURGEOIS.



MR. AMATEUR, have you ever been possessed of a desire, when you were focusing some pretty landscape or other view, to be able to stand on your head for a few seconds, that you might be able to view your picture right side up, instead of inverted as projected by the lens?

I guess we have all felt that way many times, but as such contortions are beneath the dignity or perhaps ability of the average photographer, we have been going along and getting our views composed as well as we could from what we could see on the screen.

One day when out in the country where I had located a very picturesque spot with some sheep in the foreground and had craned my neck until it was full of kinks, gazing on the little

piece of frosted glass which is technically called the focusing screen, the psychological moment came along and I be-thought myself of an idea which would make the composing of a view doubly easy.

Why not attach a mirror to the back of the ground glass screen, and thereby reflect the projected image in an upright position?

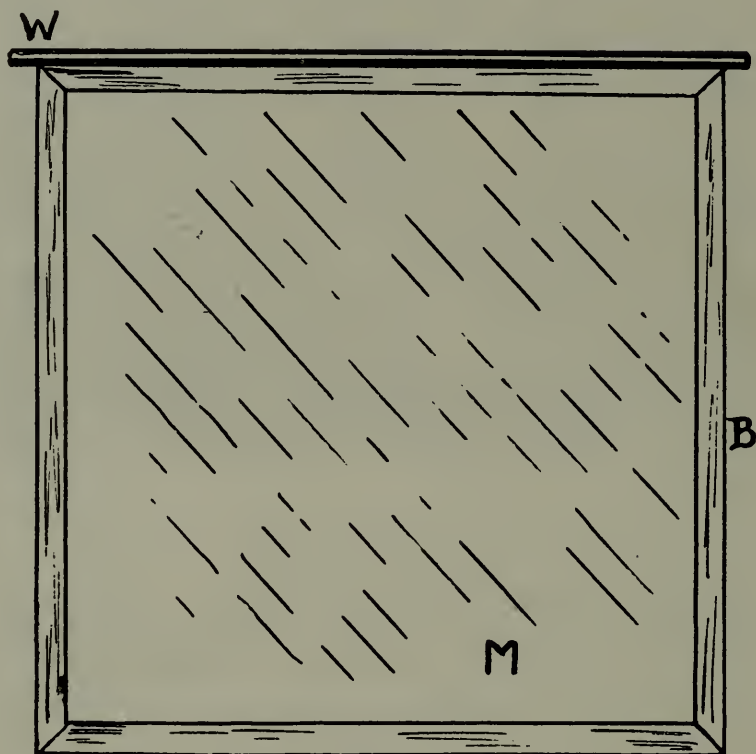


FIG. 1.

On returning home it was an easy matter to fix up such a device and I think a little description of the same with the drawings illustrating the construction will enable any amateur who is at all handy to make one for himself.

First go to some novelty store and procure a small framed mirror as near as possible the size of the focusing screen on your camera.

Remove this mirror from the frame and you will find it is easy to cut to whatever dimension you wish with a cheap glass cutter such as is sold at any hardware store for a nickel.

If your camera is 4 x 5 cut the mirror 5 x 5 inches, if it is 5 x 7 cut it 7 x 7 inches, the object being to get a square mirror

the size of the largest dimension of the plate, this for purposes of reversing.

On your shopping trip you have stopped at the store where they make art glass lamps and windows and procured a small length of the brass binding material used in holding together the small pieces of glass in constructing lamps. This is U-shaped in section, and can be fitted to your small mirror as

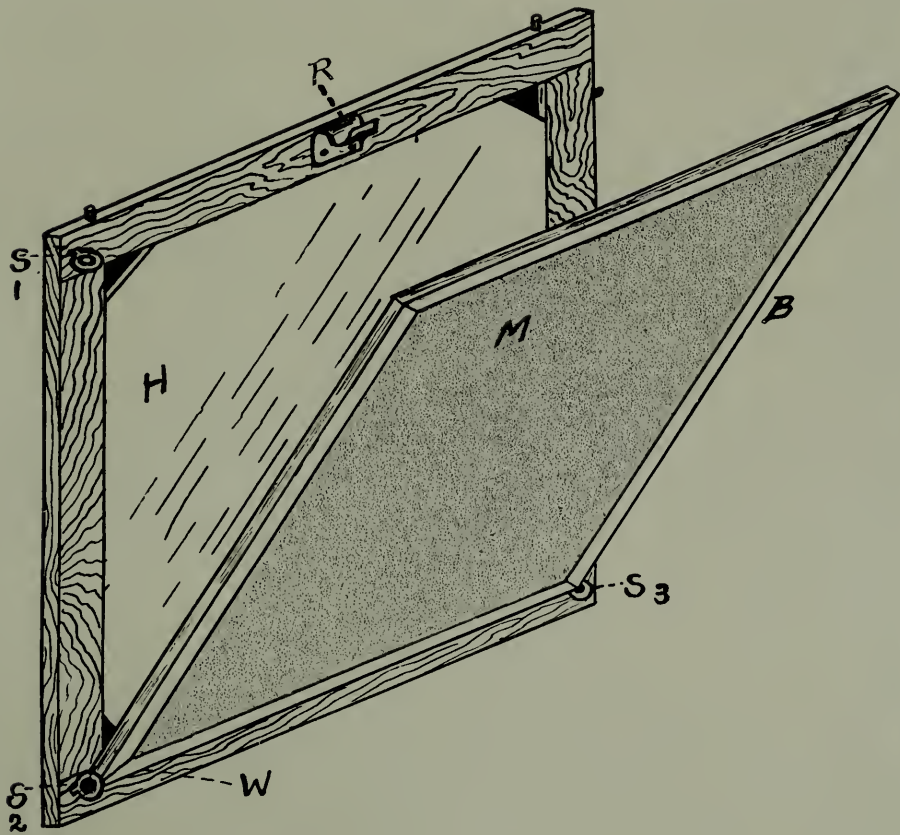


FIG. 2.

shown in the first illustration, by filling a V-shaped notch opposite each corner which makes a sort of mitre and when you come to the corner you started with, a little touch of solder at this and each corner will hold all together firmly.

Now get a piece of stout wire long enough so that when it is soldered along on one side of the brass binding, it will project about a quarter of an inch from each end of the mirror as shown at W in the first illustration.

A piece of pasteboard the same size as the mirror placed against the back of the same, before the binding is soldered

in place will give a neater appearance to the device and also protect the silvered back of the mirror.

Now procure three small screw eyes with holes of large enough size for the ends of the wire, W, to fit into and screw these into your reversible back as shown by letters S₁, S₂, and S₃, in second illustration. If you get these in the right places you will find that by turning one screw to the right and the other to the left you can remove and replace the mirror from one set of screw eyes to the other, when you reverse the back of the camera, thus always keeping the mirror in a horizontal position.

A little bent metal clip, shown at R, will hold the reflector in place when camera is not in use.

H represents the ground glass screen, B, the brass bound frame, in which the mirror sets, shown by M, with the back toward the observer and the reflecting surface facing the screen.

In using this device, simply pull on the mirror, which will release it from the clip, and by raising or lowering same until the proper angle is found, it will reflect the image on the screen in a right side up position instead of inverted, making the view appear more natural, and thereby help the composing of a pictorial picture.

If your camera is one of the kind which has a small door at the back which drops down to admit of focusing, attach the mirror to this small door so that it will not be in the way of opening or closing same and you can get the reflection just as well.

If any amateur will take a few hours time and make this attachment, he will be well repaid for his efforts.



JOHN W. SCHULER.



WINTER.

THEO. EITEL.



THE TOILERS.

W. T. KNOX.

A PLEA TO THE ONE FOR THE NINETY-AND-NINE.

By THOMAS H. HOLMES.

IT is probably true that ninety-nine out of every hundred camera owners do not know the difference between a merely good photograph and a picture as understood by pictorial workers. Many of them will never care to know. It is also probably true that a large proportion of them would be only too glad to take up the higher work if they could only get started and would quickly respond to any light thrown upon what to them is now an unfathomable mystery.

It may be that the notoriously weak and wretched condition of our photographic clubs, and the small circulations (notwithstanding the claims made to the contrary) of our popular photographic magazines, are due to the ninety and nine not feeling the need of association and mutual aid which is so



THE PENITENT.

HELEN W. COOKE.

keenly felt and appreciated by the earnest workers in pictorial effort.

And if these things be true would not much good result to all concerned, and especially to the ninety and nine, if they could be led to a trial at the making of real pictures?

All they need is the right kind of a start away down at the very foundation and not half way up the ladder. A mere idea or thought so simple, direct and definite as to be readily grasped and immediately applied to any reproduction and to nature itself.



PORTRAIT OF A CHILD.

W. E. DASSONVILLE.

It seems but yesterday that I was of the ninety and nine, as blind as any of them to a real picture; turning out nice clean work, but with an ever waning interest and an awful unrest at heart over my inability to turn out a print which I ever cared to look at a second time. I began to realize that there must really be something to this higher work called "pictorial" of which I had read so much, and started in to find out just what it was. Much to my surprise this took me many months of hard study and the reading of everything I got hold of on the subject. Strange as it may seem none of my reading help-

ed at all, I could not understand it ; it was of no aid to me in the making of a picture. I have since learned that it was to help me *make a picture better* but was not intended to help me fundamentally in the making of a picture, no matter how crude it might be.

And right here is my point, my plea to the pictorial workers to teach the ninety and nine in a simple direct way the differ-



SUNSET : (Ayr Pier, Scotland.)

GEORGE SMITH.

ence between a picture and a mere photograph or record.

Never mind how crude so long as they grasp the idea of a picture. The refinements will come along later in due time.

After months of vain endeavor to get hold of something upon the subject which I could grasp, an amateur of New York City realized my position and wrote me the key to the whole situation in a few simple words. He said, "A picture either tells a story or expresses a sentiment." "If your prints fail in either of these they are mere photographs." "Study pictures, anywhere and everywhere, try to see the story or feel the sentiment the artist has tried to convey, notice how very little it takes to make a picture."



CHD 1908

To Mr. Davis, with all my
admiration for his master work -
Mary Garden.

MARY GARDEN

Copyright 1908, by Charles H. Davis, of Davis & Eickemeyer, N.Y.

Some pictorialists may be disposed to argue these points, but remember he was talking to a novice and was telling something I could grasp and apply as a foundation, and it served its purpose well.

Since then I have never failed to pass this simple message along and if asked for an explanation I have no difficulty in finding an illustration at hand. I have frequently pointed to a gang of pavers at work on a street and shown that they then were picture material because the print would tell a story, whereas if the same gang lined up along the curb and all looking at the camera they ceased to be picture material.

I have purposely refrained from going any further into the subject of refining the picture with proper tonal values, spacing, lines, masses, etc., preferring to let the seed take root unhandicapped by complications which will come along only too soon.



GREAT CRESTED GREBE.

OLIVER G. PIKE, F. R. P. S.

CO-OPERATION.

By J. M. BANDTEL.



RESPONDING to the Editor's invitation for something useful to my fellow-workers, I cannot think of anything more pertinent to the present condition of affairs in professional photography than the following thoughts originally written for the *Association Annual*.

In the early days of photography each member of the profession worked alone, and made such progress as he could, by discoveries and experiments of his own and reading such literature as happened to be available at the time. Many of those who made what they considered a discovery of some importance, "shut up shop" and went "on the road" peddling out their "discovery" or "process" to those who could be persuaded to buy "the new formula." The "old timers" tell us that that was the day of the "process monger." That day is past, and we have the day of co-operation and conventions. Photographers began to exchange ideas and experiences freely, formed an organization and started the "get together" habit.

Conventions of the old National Photographers' Association and the newer Photographers' Association of America have been held annually for some thirty or more years, and these gatherings and exhibitions of the products of the camera have been of greater benefit and have done more to advance the progress of the art of photography than the practitioners of the present day can possibly realize; but these conventions of the one large Association have not been sufficient to meet the demands of all the members of the profession who desired to benefit by and participate in the organized effort, and therefore State societies were instituted all over the United States and Canada.

The State associations, while largely made up of members of the National Association, have yet greatly benefited a large

number of photographers who could only be reached through the smaller organizations.

Within the last six or seven years a still more thorough and far-reaching organization has been found desirable, and an effort was made toward combining all the State associations with one another and having them co-operate with the National body.

This movement was not given the support that it deserved; perhaps by reason of the frequent changes in the membership of the Executive Committees of the several State associations, and also because of the fact that the great importance of this co-operation of the societies was not sufficiently understood.

Again, within the last few years it has been found that local organizations would be the means of bringing together the photographers doing business in the larger cities, and that frequent meetings of these workers could be made very beneficial and much greater fraternal feeling developed, and now we find such societies as the Lens and Brush Club, of Boston; the Milwaukee Photographers' Association; the Professional Photographers' Society, of Philadelphia; the "Imps of the Camera," of Chicago; the several professional photographers' societies of the cities in New York State and other local organizations in the larger cities of America, and more are being instituted as time goes on. All this is an indication of progress in the way of organization, but still, each of these societies is working alone and without any other bond of union than that all are made up of professional photographers.

Now, the question presents itself, and with greater force the more and the longer we think of it: If co-operation among individual photographers has been desirable and if it has been the means of advancing the photographic profession as much as it has in the past twenty-five years or more, is it not even more desirable, and can there not be even more and greater progress made by co-operation among the several groups of individuals?

Is it not perfectly logical that there should be a union of the Photographers' Association of America, the various State associations and the local city organizations?

Darwin says, "Those communities of animals which

include the greatest number of the most sympathetic members flourish the best." This applies to the human as well as the lower animals, and with special force to those groups of individuals whose members are engaged in similar pursuits.

I have wished for this co-operation of the photographic organizations for many years—have written about it—have talked about it—have argued in its favor many times—and have many times been told that it is "too visionary," "too Utopian," etc., and yet I sincerely believe it to be the ideal toward which the photographers of America should earnestly strive—this and the National Academy of Photography.

Many photographers are aware of the fact that the copyright laws of the United States have been under revision for some time, and a few know of the attempt to slip in an amendment that would permit the newspapers to reproduce the work of the photographer without so much as asking "by your leave," even though the photographers' product was supposed to be protected by copyright. I greatly fear, however, that very few fully recognize the great wrong and injustice to the photographic profession that lies hidden under this amendment.

A few of our enthusiastic friends have struggled manfully and long in behalf of our rights—many times, I fear, without sufficient encouragement or assistance, if only in the complying with their request that photographers write to their Congressmen and forward the letters of protest that were furnished them. And at this time the struggle still goes on.

Would it be such a hard struggle, think you, and would there need be such fears of failure for them if they could feel that back of them was the support and encouragement of such an organization as I have indicated above?

Think this over, and let us lose no time in getting closer together and forming better organized associations.

The time will be when other important matters will require our attention and organized effort, and if we better understand one another and work together with greater harmony we will be ready to meet the conditons that may present themselves.

Let us have co-operation, not only of the individuals, but also of the photographic organizations.



MOTHERHOOD.

MRS. CALEB KEENE.

Another matter that I would most earnestly call to the attention of all members of photographic organizations—the building up of our membership. There is too small a proportion of the membership of the profession included in the membership of the associations.

We need greater strength in our organizations. It should be the self-imposed duty of every association member to speak well of his organization, and appoint himself a committee of one to help increase the number of his association membership. This is recognized as an important feature in all fraternal and business organizations. Let us also recognize this importance and do our part in the building up of our Local, State, and National associations.



THE CHILD AND THE ROSE.

MRS. W. W. PEARCE.



INDIAN PIPES.

MARGARET BODINE AND NINA LEWIS.



THE ROAD TO THE ICEHOUSE.

C. F. CLARKE.



THE SCULPTOR.

R. Dührkoop.



Illustrating "Psychological Moments"—No. 1.

JERE MONTAGUE.

PSYCHOLOGICAL MOMENTS.

By JERE MONTAGUE.



YES, I realize that you have heard quite a little lately of the psychological moment, and some of my readers I am sure are skeptical as to the existence of such a thing; it is to dispel this mist of skepticism and to thoroughly prove beyond any reasonable doubt that this long-named moment *does* really exist, that I write my own personal experiences of the past few years, illustrated by a few photographs taken from my collection, which could readily be termed "Psychological Moments I have met."

To begin at the very beginning: what is a psychological moment? To my own mind, it is the momentary state of a human being or dumb animal, where all else is forgotten save the sole impulse to perform some single act. Take the example of the pointer at the moment of scenting a partridge or the more homely case of the baby-boy just lifting a spoonful of food from his bowl. In the first instance the dog's mind is concentrated upon but one thing, and that is to locate the partridge, and the baby-boy's mind is moved by but one im-

pulse, and that is to eat the gruel! It is the presence or the absence of the portrayal of this psychological moment that either makes our amateur photographic picture a prize winner, or a stiff, unnatural pose, and a sure contribution to the waste basket. How do you know when to release your shutter at the



Illustrating "Psychological Moments"—No. 2.

JERE MONTAGUE.

right time? It is by the same process of reasoning plus experience that has enabled you, by observation of detail, to know whether to give your plate a $\frac{1}{10}$ second or a 2 minute exposure, whether you shall use a ray screen, or why orthochromatic plates are best suited for the proper rendition of color values. Look back at some of your early photographic products. Look at the picture you took of your little boy all dressed in his best "Sunday-go-to-meeting" clothes; see how

he looks straight into the lens; see his forced, conscious, and unnatural expression; no psychological moment *there*, you observe. How do you *know* there is not? Ah, there is where your photographic experience has benefitted you. *Now*, you would be ashamed to produce a result, such as formerly you showed all your friends with great delight. You are by ex-



Illustrating "Psychological Moments"—No. 3.

JERE MONTAGUE.

perience fast learning to know and realize that the psychological moment is the keynote of success.

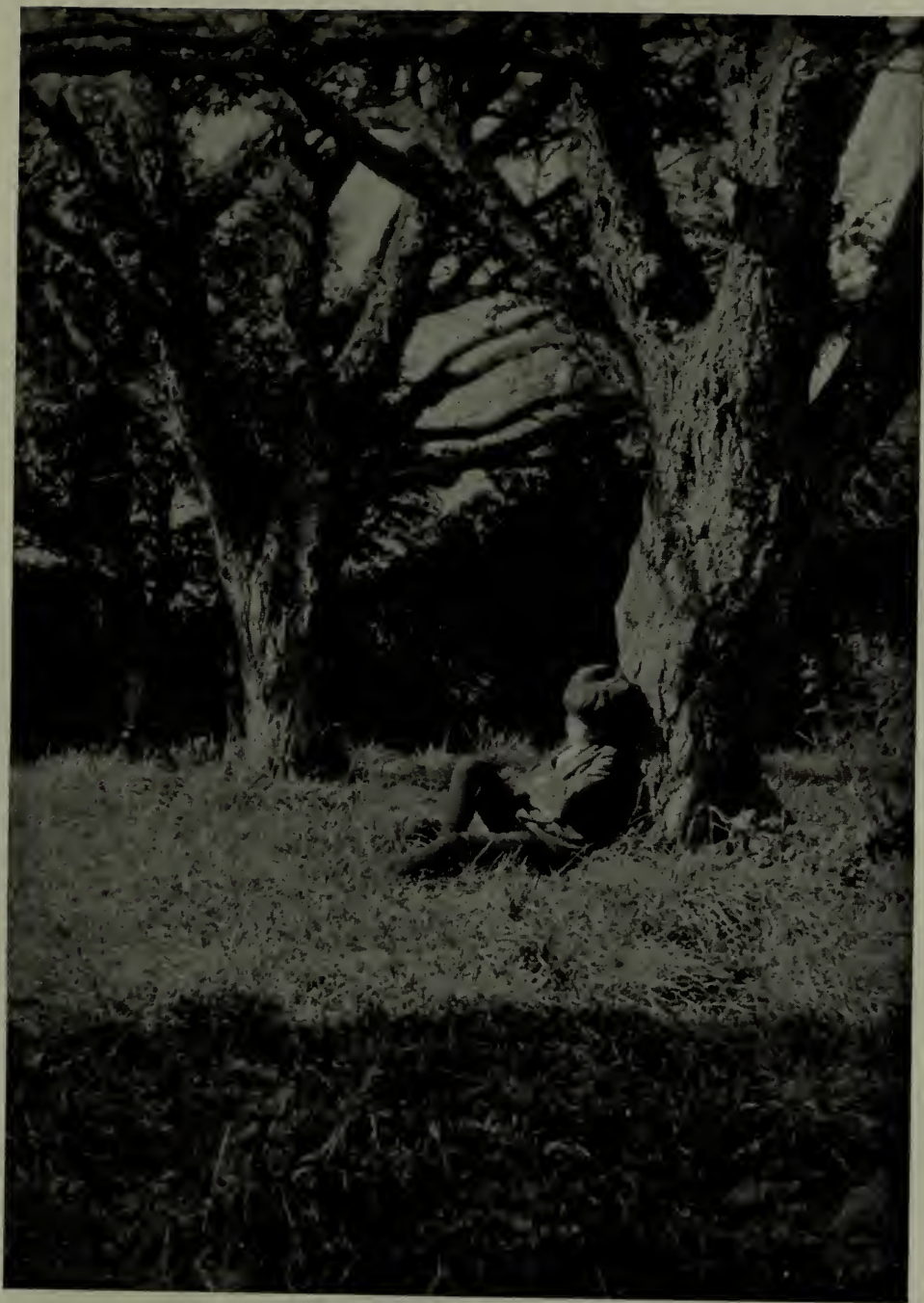
Let us briefly study together, the first of the three appended photographs. Were these two children and dog all *posing* until I was good and ready to release my shutter? No, no. It was only by partly screening myself by means of an intervening bush, and making some half dozen exposures, that I was enabled to pick out the "psychological one." Here we find three brains all intent upon accomplishing *one* act. The boy's

little mind was intent upon finishing a soda cracker—so intent was he indeed that he is depicted just on the point of introducing more food into his already crowded mouth. The girl is cerebrally occupied by the one thought of how good that cup of cool lemonade tastes upon this hot August afternoon. The dog is wondering, I am almost sure, whether the boy is going to *leave* any of that soda cracker!

As to the second photograph. Here we see our friend, the dog, being made to “speak” for the long-cherished bit of sweets, upon which he has had his eye for a long time. Draw a straight line from the center of his eye, and see how clean it bisects that piece of cracker! The child, all excitement, on tiptoe, lips parted, awaits the expected “bark” which denotes the canine’s “please.” Is not this a truly rare portrayal of a psychological moment? In the last of these illustrations we find a young man, all intent upon watering his own little garden. He is thinking of nothing else. The photograph tells it all.



MISS JEAN M. HUTCHINSON.



IM SONNENSCHIN.

RUSSELL W. TAFT.

RONDEAU

[Anonymous.]

In summer time corporeal ease
The "Artist" shuns and fieldward flees;
 Heedless of Nature's April tears,
 Or old Sol's calorific jeers,
He wanders o'er the upland leas;

Or, 'mid the bosky silences,
He seeks the sylvan deities;
 Pan's pipe, melodious, he hears
 In summer time.

Then, while mild Zephyr in the trees
Weaves myriad voiced symphonies,
 He plods home, loaded (to the ears)
 With germs of future Salon smears,
And kindred weird enormities,
 In summer time!



ELE MENTAL CALM.

RUSSELL W. TAFT.

A DARKROOM BLIND.

By ROBERT E. M. BAIN.



THIS is a form applicable especially to bathrooms and in rooms in rented houses where permanent alterations are not advisable.

To the frame of the window to be darkened screw strips of wood $1\frac{1}{2}$ inches square and mitred at the ends as shown in Fig. 1. To this attach thin boards, for the sides 3 inches wide and for the top and bottom 5 inches wide of $\frac{1}{4}$ inch wood.

The new material should then be painted dead black. It is not necessary to paint the window frame. A heavy opaque window curtain, mounted on a spring roller should be hung inside of this box and when pulled down the room will be found

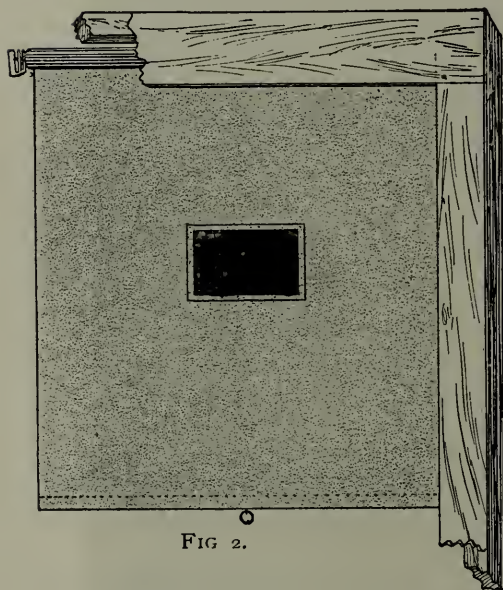


FIG. 2.

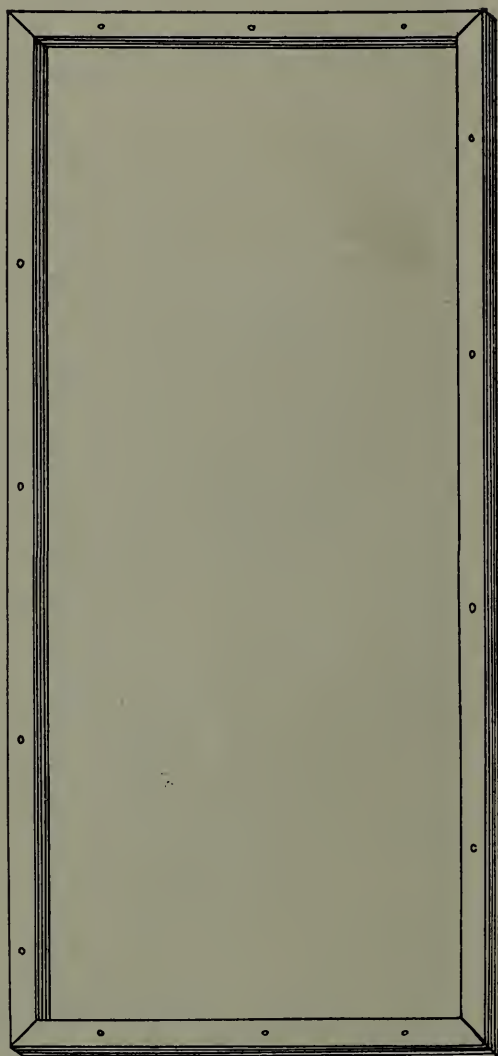


FIG. 1.

quite dark. If desired for developing purposes a ruby light may be inserted in the curtain

by cutting out a place at the proper height, say 3 inches by 8 inches and a piece of ruby celluloid glued over this opening (see Fig. 2) will give the necessary light.

This apparatus will be found cheap and effective and may be removed without disfiguring the window. The curtain should fit quite up to the sides of the box. Any ordinary curtain of opaque material will serve. It need not be black. Sketch No. 2 shows the arrangement in detail.



REED WARBLER VISITING ITS NEST.

WILLIAM FARREN.

(See article on pages 101-104.)



CATHARINE WEED WARD.

Canterbury: Bell Harry Tower and Gateway from Prior's Green.



CATHARINE WEED WARD.

Canterbury Cathedral: Transept (North) of the Martyrdom. [Not Becket's Monument.]

BRITISH CONVENTIONS.

By H. SNOWDEN WARD, F.R.P.S.

President-elect of the Photographic Convention of The United Kingdom, with some views of the district in which the Convention of 1909 is to be held, by Mrs. Catharine Weed Ward.



HERE are so many differences between the methods of British and American photographic "Conventions" that a few lines on the Old Country's way may be of interest.

The Photographic Convention of The United Kingdom was founded twenty-three years ago, in quite a small way, and arose from a conversation between the late J. Traill Taylor, the late Alexander Henderson, and Mr. J. J. Briginshaw, who became its first secretary. It first met at Derby, for three days, in 1886, and since then has held meetings in Derby a second time, Glasgow twice, Dublin twice, Birmingham, London, Chester, Bath, Edinburgh, Plymouth, Shrewsbury, Leeds, Great Yarmouth, Gloucester, Newcastle-on-Tyne,

Oxford, Cambridge, Perth, Southampton, Hereford, and Brussels. The Presidents have been: J. Traill Taylor, Andrew Pringle, C. H. Bothamley, George Davison, William Bedford, George Mason, Sir Howard Grubb, A. Haddon, H. P. Robinson, F. P. Cembrano, John Stuart, William Crooke, Thomas Bedding, Sir William Herschel, Bart., Sir Robert S. Ball, Sir Robert Pullar, G. Herbert Strutt, Dr. John Joly, E. J. Humphery, Alfred Watkins, J. P., and Sir Cecil Hertslet.

A common charge against the convention is that it is simply one great picnic, and while this is not strictly true, it is a fact that the proceedings largely consist of what the members call "a good time." The usual procedure (with slight variations according to locality) consists of an informal meeting of members on the morning of the first day, with a formal reception by some local body in the afternoon, and a *conversazione* in the evening. The Tuesday, Thursday, and Friday of the week are devoted to long excursions to places of historical interest or natural beauty, and in the evenings of two of these days there are meetings for the reading of papers, demonstrations and lantern displays. The Wednesday morning is usually reserved for a short excursion or to photographing in the city at which the meeting is held, for which purpose a place of some antiquarian interest is generally selected. The afternoon is often pleasantly filled by a garden party or reception by the president (if a local man), or sometimes by the local mayor or the chairman of the reception committee. In the afternoon the official group is always taken, and members who attend regularly have a good deal of pride in their collections of these groups for many years past. The Wednesday evening is devoted to the convention dinner, which always produces much good fellowship, generally some good speeches, and usually some excellent music. The Saturday is a broken day, as many of the members are obliged to leave for home early in the morning, but as a rule a short excursion is arranged, and very often the Saturday party of only some 30 to 40 people proves the most enjoyable one of the whole series.

Although the excursion element is strong, most of the conventioners are accompanied by their cameras, and a great amount of useful work is done. The record number of plates exposed on one of the convention excursions was something



Canterbury: Doorway to St. John's Hospital

CATHARINE WEED WARD.

over 1,100, and as most of the people work in little groups and are constantly comparing notes, cameras, exposures, etc., this work in the open proves very useful.

The subscription to the convention is exceedingly reasonable, being only 5 shillings per annum, and this entitles the member to a great many privileges and free admission to all the meetings, together with special terms, reduced fares, etc., for the excursions. The outings themselves are always excellently arranged, and in more than one case the conventioners have been allowed to photograph in buildings of the greatest possible interest which have never before been photographed by any one. In other cases (and this happens almost every year), the convention party is admitted with special facilities and all sorts of convenient arrangements to many places which, in ordinary circumstances, require especial permission that is difficult to obtain and often the payment of fees in addition.

The convention is usually held during the second week in July, and it is expected that next year it will run from Monday the 5th of July to Saturday the 10th inclusive. The place of meeting will be Canterbury, with its grand old cathedral, the mother church of England, and its charming situation in the midst of the most interesting part of the garden of England. Excursions are not yet arranged, but it is highly probable that a whole day will be devoted to Rochester, with its interesting cathedral, its castle which is one of the best remaining examples of Norman domestic architecture and its host of antiquities and Dickensian associations. Probably one day will be devoted to driving along parts of the Pilgrims' Ways from London and Winchester, visiting Harbledown, with its leper church, leper hospital, the Black Prince's Well, etc; Faversham, with its fine old church and its buildings connected with Shakespeare's Arden of Faversham; Davington, with its house and church of the Poor Nuns; Ospringe, with its Maison Dieu of the Knights Hospitalers; Chilham, with its church and castle, and the beautiful valley of the Stour. The third day will probably be devoted to Rye, Rye Harbor, and Winchelsea, those old Cinque Port towns which were great in the middle ages, but which have been deserted by the sea. This excursion will probably include a boat trip along the military canal which was made when there was fear of Bonaparte's invasion.

Canterbury itself offers opportunities for an enormous amount of work, both architectural and landscape, and there is no doubt that very special facilities will be given. In addition to these, there are many most interesting places within a very few miles which can easily be visited by those who attend the convention for a day or two longer than the week which is covered by the actual programme.

It will be seen from the list given above that the convention has once left the United Kingdom. It has always welcomed visitors from other countries, and especially from the United States, and it is because I hope that some of the readers of this Annual may be able to include the convention week in their European trips next year that I venture to contribute these lines. On behalf of the whole of the members I am sure that I can safely say that any good American photographers who like to join us will be exceedingly welcome.



CATHARINE WEED WARD.

Saxon Font, St. Martin's Church, Canterbury; where
King Ethelbert was baptized, June 2d, 597 A. D.



YOUNG AMERICA.

O. C. CONKLING.



Cleo S. Bourgeois.

American Annual Formulary

In the following section we have gathered together a typical collection of Formulæ and Tables, which will assist the photographer in his every day work. It will be noticed that makers' formulæ are omitted. These can best be obtained by direct application to the makers. The appended formulæ are selected from the working methods of practical photographers.—EDITOR.

DEVELOPERS FOR NEGATIVES.

Dry Pyro (Fairman). A developer for those who develop at irregular intervals.

1.—Dissolve 1 ounce of sodium sulphite in 3 ounces of distilled water heated to boiling point, and when the salt is dissolved add water to make up solution to 4 ounces. Keep in a well corked 4 ounce bottle, labeled sodium sulphite 1:4.

2.—Dissolve 1 ounce of sodium carbonate in 3 ounces of hot water, make up to 4 ounces of solution and label carbonate of soda, 1:4.

3.—Dissolve 1 ounce of potassium bromide in 9 ounces of cold water, add water to make up the solution to 10 ounces and label potassium bromide 1:10. Keep on hand an ounce of dry pyro. When ready to develop, take a 6 ounce graduate with measures marked in drams and ounces. Pour into this $\frac{1}{2}$ ounce of the sulphite solution; dissolve in it 5 grains of pyro; add 3 drams of carbonate solution and 5 drops of potassium bromide 1:10. Add water to make the developing solution up to 5 ounces in winter time, or 6 ounces in summer time.

Pyro Soda (Mellen). No. 1.—Water, 20 ounces; sodium sulphite (crystals), 4 ounces; carbonate of soda, 2 ounces. Dissolve the sulphite first and then add the carbonate.

No. 2.—Water, 6 ounces; pyro, 1 ounce. For correct exposures take 1 dram of No. 2; 1 ounce of No. 1, and add 2 ounces of water. For snapshots, or plates thought to be under-exposed, use 1 dram of No. 2; $1\frac{1}{2}$ drams of No. 1 and 6 ounces of water. For over-exposure take 2 drams of No. 2, 1 ounce of No. 1, and 6 ounces of water. Or, instead of the 2 drams of No. 2 in this solution use 1 dram No. 2 and 10 drops of a 10 per cent. solution of potassium bromide.

Metol (Wenzel). No. 1.—Metol, 30 grains; potassium metabisulphite, 10 grains; potassium bromide, 5 grains; water, 5 ounces.

No. 2.—Sodium sulphite, 240 grains; sodium carbonate, 240 grains; water, 5 ounces. 1 and 2 combined form a one-solution developer for normal exposures. For use as a two-solution developer, for normal exposures take of No. 1, 1 part; No. 2, 1 part; and water, 1 to 2 parts, according to the assumed degree of under-exposure. For over-exposures take of No. 1, 2 parts; No. 2, 1 part; and add 10 per cent. solution of potassium bromide as required.

Hydroquinone (Shoemaker). No. 1.—Hydroquinone, 123 grains; sodium sulphite (crystals), 1,000 grains; bromide of potassium, 3 grains; water, 16 ounces. Dissolve the hydroquinone in 6 ounces of the water; in the remaining 10 ounces dissolve the sulphite and bromide; combine the two solutions in one bottle and label "stock solution."

No. 2.—Water, 10 ounces; caustic soda, 180 grains. For correct exposure use 3 ounces of No. 1, $\frac{1}{2}$ ounce of No. 2, and add 1 ounce of water. For over-exposure dilute this solution with 2 ounces of water.

Ortol (Pentlarge). No. 1.—Water, 1 ounce; metabisulphite of potash, 4 grains; ortol, 8 grains.

No. 2.—Water, 1 ounce; sodium sulphite, 48 grains; carbonate of potassium, 16 grains; carbonate of soda, 32 grains. Add a drop or two of a ten per cent. solution of bromide of potassium. For correct exposure mix No. 1 and No. 2 and dilute with an equal bulk of water. For under or over-exposure, add less or more water than equal bulk of Nos. 1 and 2 combined.

Metol-Hydroquinone for Orthochromatic plates.—Water, 20 ounces; metol, 14 grains; potassium metabisulphite, 18 grains; hydroquinone, 56 grains; sodium sulphite, 1 ounce; sodium carbonate, $1\frac{3}{4}$ ounces. Use 1 drop of a 10 per cent. potassium bromide solution to each ounce only if necessary.

Adurol. No. 1.—Water, 10 ounces; sodium sulphite, $1\frac{3}{4}$ ounces; adurol, 85-grains.

No. 2.—Water, 10 ounces; potassium carbonate, $1\frac{1}{4}$ grains. For average outdoor exposures use equal quantities Nos. 1 and 2; for fully timed exposures take 1 ounce each of No. 1, No. 2, and water.

Amidol. A concentrated developer.—Water, 13 ounces; sodium sulphite (crystals), $2\frac{1}{2}$ ounces; when dissolved add amidol, $\frac{1}{4}$ ounce. The solution keeps fairly well in bottles completely full and well corked. For use take 1 ounce of the concentrated solution and dilute with 3 or 4 ounces of water.

Rodinal. A single solution developer.—For normal exposures dilute 1 part of Rodinal with 20 parts of water; for over-exposure rodinal, 1 part; water, 10 to 20 parts; and a liberal dose of a ten per cent. solution of potassium bromide; under-exposure, rodinal, 1 part; water, 20 to 40 parts. For uncertain exposures begin with rodinal, 1 part; water, 25 and when the character of the exposure is indicated transfer the plate to rodinal solution of the strength required.

FIXING BATHS.

Plain Fixing Bath.—Dissolve 1 pound of sodium hyposulphite in 2 quarts of water or 4 ounces of the hypo in a pint of water, according to the bulk of solution required.

Acid Fixing Bath (Carbutt).—Sulphuric acid, 1 dram; sodium hyposulphite, 16 ounces; sodium sulphite, 2 ounces; chrome alum, 1 ounce; warm water, 64 ounces. To prepare the bath: dissolve the hypo in 48 ounces of the water; the sodium sulphite in 6 ounces; mix the sulphuric acid with 2 ounces of the water and pour slowly into the sulphite solution, and then add to the hypo solution. Dissolve the chrome alum in 8 ounces of water; add to the bulk of the solution and the bath is ready for use.

INTENSIFICATION.

Mercuric Chloride Process. No. 1.—Mercuric chloride, 200 grains; bromide of potassium, 120 grains; water $6\frac{1}{2}$ ounces.

No. 2.—Sodium sulphite, 1 ounce; water, 4 ounces. The well-washed negative, free from hypo, must be thoroughly bleached in No. 1; well

washed; and then blackened in No. 2. After blackening it is well washed again.

REDUCTION.

Farmer's Reducer.—Dissolve 1 ounce of potassium ferricyanide in 9 ounces of water and make up to 10 ounces, forming a ten per cent. solution. Label this poison. Thoroughly wet the negative to be reduced. Take enough fresh plain hypo fixing bath for the purpose and add to it enough of the ferricyanide solution to make it a light straw color. The negative to be reduced is immersed in this solution, when it will be seen to lose density. Rock the tray to ensure evenness of action. This reducer can also be used for local treatment.

Ammonium Persulphate.—Prepare a solution in the following proportions: Ammonium persulphate, 15 grains; water, 1 ounce. The solution should be made just before use. The negative must be perfectly free from hypo or it will be stained by the persulphate. When the desired reduction has been reached transfer the negative without washing to a 10 per cent. solution of anhydrous sodium sulphite. Wash finally for 15 or 20 minutes.

CLEARING STAINED NEGATIVES.

Acid Alum.—Dissolve $\frac{1}{8}$ th of an ounce of pulverized alum in 20 ounces of water and add 1 dram of sulphuric acid. Immerse the stained plate in this solution for a few minutes; remove plate, wash, and then set in the rack to dry.

PRINTING PROCESSES.

Carbon Tissue, Sensitizer for (Bennett).—Potassium bichromate, 4 drams; citric acid, 1 dram; strong ammonia water, about 3 drams; water, 25 ounces; dissolve the bichromate and citric acid in hot water, and add sufficient ammonia to change the orange color of the solution to lemon-yellow. Sensitize for 90 seconds; reducing the water softens the gradation in the print; increasing it to 30 ounces gives more vigor.

Kallitype Sensitizer for Black Tones (Thomson).—Distilled water, 1 ounce; ferric oxalate (Merck's or Mallinckrodt's), 15 grains; citrate of iron and ammonia (brown scales), 25 grains; chloride of copper, 8 grains; oxalate of potassium, 35 grains; oxalic acid, 15 grains; silver nitrate, 15 grains; gum arabic, 10 grains.

Developer.—Distilled water, 1 ounce; silver nitrate, 40 grains; citric acid, 10 grains; oxalic acid, 10 grains.

Blue Printing Sensitizing Formulae (Brown). A.—Dissolve 110 grains ferric ammonium citrate (green) in 1 ounce of water.

B.—Dissolve 40 grains of potassium ferricyanide in 1 ounce of water. These two solutions are made up separately in any desired quantity with the proportions given. They are then mixed together and kept in a stoneware bottle, but the single solution should always be filtered before use. The mixture will retain its good qualities for months if kept from the light.

(Millen).—Potassium ferricyanide, 1 ounce; ammonio-citrate of iron, $1\frac{1}{2}$ ounces; distilled water, 10 ounces. Mix thoroughly and filter. The solution should have a deep wine-color and dry on the paper a lemon-yellow. If the solution is green and has a precipitate, the ammonio-citrate is old and spoiled, or you have been given plain citrate of iron. The mixture should be kept from the light by placing the bottle in a light tight tin or similar container.

(Nicol). A.—Ammonio-citrate of iron, 3 ounces; water, 4 ounces.

B.—Potassium ferricyanide, $2\frac{1}{4}$ ounces; water, 4 ounces. Just before using mix together one part each of A and B and add two parts of water.

Bromide Paper Developers: Hydroquinone-metol. No. 1.—Water, 10 ounces; hydroquinone, 52 grains; potassium metabisulphite, 18 grains; sodium sulphite, 5 drams; sodium carbonate, $1\frac{1}{4}$ ounces.

No. 2.—Water, 10 ounces; metol, 30 grains; sodium carbonate, 5 drams; sodium sulphite, 5 drams. One or two drops of a potassium bromide ten per cent. solution added to 1 ounce of the mixed developer will increase contrast and keep the whites pure. Equal parts of 1 and 2 give excellent prints from a normal negative; one part of 1 and two of 2 give gray prints with maximum half-tone and gradation; two parts of 1 and one of 2 give vigorous prints from soft delicate negatives.

Amidol for rich blacks (freshly prepared). Distilled (or boiled) water, 4 ounces; sodium sulphite (crystals), 90 drams; amidol, 10 to 15 grains. Add a drop of 10 per cent bromide solution to each ounce of developer.

Bromide Prints: Toning Formulae for Sepia Tones: Hypo Alum.—Hyposulphite of soda, 5 ounces; ground alum, 1 ounce; boiling water, 70 ounces. Dissolve the hypo in the water, and then add the alum slowly. A milk white solution results which should be decanted when clear. It is not used until cold (about 60 deg. Fahr.).

Sulphide of Sodium.—The fixed and washed print is treated with one of the following solutions: (1) Potassium ferricyanide, 10 grains; potassium bromide, 10 grains; water, 1 ounce; or (2) potassium ferricyanide, 20 grains; sodium chloride (common salt), 30 grains; water, 1 ounce. The image will be bleached by either of these solutions in a few minutes, the whitish appearance of the deposit being caused by its change into a salt of silver. After 5 minutes in running water apply the sulphuretting solution: Dissolve 3 ounces of sodium monosulphide in 15 ounces of water; boil the solution for about 10 minutes, filter off the black precipitate formed and when cooled make up to 25 ounces with water. To tone, take 12 per cent. stock sodium sulphide solution, 1 ounce; water, 12 to 20 ounces.

Red Tones: Copper.—Dissolve 100 grains of ammonium carbonate in 2 ounces of water, and in this solution dissolve 10 grains of sulphate of copper. Then add 20 grains of potassium ferricyanide. A clear, dark green solution results which gives a red-chalk tone in about three minutes. Tone until the deepest shadow is converted and then wash the print for ten minutes.

Green Tones: Vanadium.—Bleach print in the following: Potassium ferricyanide, 10 grains; ammonium carbonate, 100 grains; water, 1 ounce. Wash well and apply: Ferric chloride, 2 grains; vanadium chloride, 2 grains; ammonium chloride, 4 grains; hydrochloric acid, 5 minims; water, 1 ounce.

Blue Tones: Iron.—Bleach print in: potassium ferricyanide, 10 grains; ammonium carbonate, 100 grains; water, 1 ounce; then tone in ferric chloride, 5 grains; hydrochloric acid, 5 minims; water, 1 ounce.

Gum Bichromate (Caspar Millar). A.—Gum arabic, $1\frac{1}{4}$ ounces; water, $3\frac{1}{2}$ ounces; salicylic acid, 4 grains.

B.—Chrome alum, 45 grains; water, $3\frac{1}{2}$ ounces. Grind A and B with water and pigment, brush over paper, dry and store.

Suggested formula:—A, 2 ounces; B, $1\frac{1}{2}$ drams; carbon black, 10 grains; sensitize for 2 minutes in 5% bichromate solution.

Platinum: Sensitizing Gold Bath and Sepia Papers. A.—Chloroplatinite of potassium, 15 grains; distilled water, 90 minims.

B.—Ferric oxalate, 21 grains; oxalic acid, 2 grains; distilled water, 183 minims. For cold bath paper, mix A and B, and add 15

minims of water. For sepia paper mix A and B and add 15 minims of a 5% solution of mercuric chloride. The addition of a few grains of potassium chlorate to any of the above gives increased contrast in the print. From 140 to 170 minims of solution are sufficient to coat a sheet of paper 20 x 26 inches.

Platinum Prints: to Intensify. A.—Sodium formate, 45 grains; water, 1 ounce.

B.—Platinum perchloride, 10 grains; water, 1 ounce.

C.—For use, take 15 minims each of A and B to 2 ounces of water. Immerse prints until sufficiently intensified, then remove and wash.

Gold toning.—For blue-black tones, for slight strengthening, and for converting rusty black into pure black. Soak print in warm water, lay on warm glass, brush over glycerine and blot off. Pour on few minims of solution of gold chloride (1 grain per dram), and rapidly brush in all directions. When toned, rinse, and sponge back and front with: Metol, 50 grains; sodium sulphite, 1 ounce; potassium carbonate, ½ ounce; water, 20 ounces. Tone in daylight. Do not tone sepias or old prints in this solution.

Platinum Prints: to Distinguish from Bromide.—Soak the print in saturated solution of mercuric chloride: a platinum print will not change; a bromide print will bleach.

MISCELLANEA.

Substitutes for Ground Glass. 1.—Paraffin wax makes an excellent substitute for ground glass if the latter should get broken. Iron the paper on to a sheet of plain glass. It is more transparent than the focusing screen and the image will appear clearer; hence, in exposing allowance must be made for the difference in illumination.

2.—Resin dissolved in wood alcohol and blown over the glass; this must not be scratched; it gives a very fine-grained ground glass effect.

3.—White wax, 120 grains; ether, 1 ounce.

Varnish for Negatives and Lantern Slides.—Dissolve 1 part of gum sandarac in 25 parts of benzole. Apply cold.

Backing Mixture.—Dissolve a 4 ounce stick of licorice in 8 ounces of water with the aid of gentle heat. When dissolved rub into the mixture 1 ounce of burnt sienna in powder, using the back of a spoon for this purpose. When cold, bottle for use.

Retouching Mediums. (1.)—Pure alcohol, 2 parts; sandarac, 1 part; benzine, 4 parts; acetone, 4 parts.

(2.)—A simpler medium is made by dissolving a little resin in turpentine.

Adhesive for Labels.—Soak 1 part of the best glue in water until thoroughly swollen, add a little sugar candy, 1 part of gum arabic and 6 parts of water. Boil with constant stirring over a spirit lamp until the whole gets thin. Coat sheets of paper with it; let dry and cut up into convenient sizes.

Protective Varnish for Labels.—Use waterproof ink when writing on the paper. Dry, and coat with the following varnish: cut into fine shreds an old celluloid negative film, from which all traces of gelatine have been removed. Put the shreds in a small bottle; half fill with amyl acetate and then add wood alcohol or methylated spirit which will dissolve the celluloid.

Stains: to Remove from the Hands.—Developer stains: solution of citric or oxalic acid. Silver nitrate stains: Water, 4 ounces; chloride of lime, 350 grains; sulphate of soda, 1 ounce. Apply with a brush.

Tarnished Daguerreotypes, to Restore.—Remove the silvered plate from the case, and place it, image uppermost, under a box lid or other protector from dust, etc. Put a small piece of potassium cyanide into

a graduate and pour over it one or two ounces of water. Hold the daguerreotype by the corner with a pair of pliers, rinse it in clear running water, then pour over it the weak cyanide solution (a 3 per cent. solution is usually employed), and return it to the graduate. Repeat this operation several times until the discoloration quite disappears. Wash well in running water, and then, before the surplus water has time to collect in tears upon the image, begin to dry the plate gradually over a spirit lamp, holding the plate in an inclined position so that it will dry from the uppermost corner. The secret of success is in the use of pure water for the final washings and the drying of the image without check or the formation of tears.

Poisons and Antidotes.—Administer the antidote as soon as possible. If a strong acid or alkali, or cyanide of potassium, has been swallowed, lukewarm water in large quantities should be swallowed at once. Where strong acids or alkalies have not been swallowed, rid the stomach of the poison by vomiting: for this purpose take 25 grains of zinc sulphate in warm water.

Polished Surfaces: to Photograph.—Smear the surface with soft putty so as to deaden the reflections. Photograph the article against a black background, and stop off all reflections, allowing the light to come from one direction only. To photograph hollow cut glassware fill with ink or aniline black water dye. Before photographing machinery deaden the bright parts with putty.

Hardening Negatives.—Immerse them for a few minutes in: Formalin, 1 ounce, water, 30 ounces.

Stained Fingers.—Stains arising from development generally disappear if the fingers, before they have dried, be rubbed with a crystal of citric acid.

Lens: To Clean.—The lens should always be kept free from dust or other impurities. To clean it, spread upon a table a clean sheet of paper; take the lens apart; and with a camel-hair brush dust each of the combinations on both sides. If the surfaces of the lenses are very dirty and have lost their polish make up the following: Nitric acid, 3 drops; alcohol, 1 ounce, distilled water, 2 ounces. Dip a tuft of filtering cotton in this solution, rub each side of the lens, then polish with an absolutely clean chamois. Clean the lens tube before replacing the lenses, each of which should be finally dusted with a camel hair brush.

Blackening Brass.—Make two solutions: Copper nitrate, 200 grains, water, 1 ounce. Silver nitrate, 200 grains, water, 1 ounce. Mix the solutions; clean the article well; dip it in the solution for a moment; withdraw it; dry it; and heat it strongly.

Black, Dead, for Wood.—Shellac, 40 parts; borax, 20 parts; glycerine, 20 parts; water, 500 parts. When dissolved add 50 parts aniline black.

Film: to Remove from Glass: Make two solutions. A.—Sodium fluoride, 6 grains; water, 4 ounces.

B.—Sulphuric acid, 6 drops; water, 1 ounce. Place the negative in solution A for two minutes and then place directly in solution B. After another two minutes lift the film with the finger from one corner of the plate. It will soon leave the glass.

THE ELEMENTS:

THEIR NAMES, SYMBOLS, AND ATOMIC WEIGHTS.
OXYGEN STANDARD.

Compiled by HENRY F. RAESS.

<i>Aluminium</i> . . . Al	27.1	HYDROGEN	H	1.008	Rubidium	Rb	85.4
<i>Antimony</i> . . . Sb	120.2	<i>Indium</i> . . . In	114		<i>Ruthenium</i> . . . Ru	101.7	
<i>Argon</i> . . . A	39.9	<i>Iodine</i> . . . I	126.85		<i>Samarium</i> . . . Sm	150	
ARSENIC . . . As	75.0	IRIDIUM . . . Ir	193.0		<i>Scandium</i> . . . Sc	44.1	
<i>Barium</i> . . . Ba	137.4	<i>Iron</i> . . . Fe	55.9		<i>Selenium</i> . . . Se	79.2	
<i>Bismuth</i> . . . Bi	208.5	<i>Krypton</i> . . . Kr	81.8		<i>Silicon</i> . . . Si	28.4	
<i>Boron</i> . . . B	11	<i>Lanthanum</i> . . . La	138.9		SILVER . . . Ag	107.93	
BROMINE . . . Br	79.96	<i>Lead</i> . . . Pb	206.9		SODIUM . . . Na	23.05	
<i>Cadmium</i> . . . Cd	112.4	LITHIUM . . . Li	7.03		<i>Strontium</i> . . . Sr	87.6	
<i>Cesium</i> . . . Cs	132.9	<i>Magnesium</i> . . . Mg	24.36		SULPHUR . . . S	32.06	
<i>Calcium</i> . . . Ca	40.1	MANGANESE . . . Mn	55.0		<i>Tantalum</i> . . . Ta	183	
CARBON . . . C	12.00	MERCURY . . . Hg	200.0		<i>Tellurium</i> . . . Te	127.6	
<i>Cerium</i> . . . Ce	140.25	MOLYBDENUM . . . Mo	96.0		<i>Terbium</i> . . . Tb	160	
<i>Chlorine</i> . . . Cl	35.45	<i>Neodymium</i> . . . Nd	143.6		<i>Thallium</i> . . . Tl	204.1	
<i>Chromium</i> . . . Cr	52.1	<i>Neon</i> . . . Ne	20		<i>Thorium</i> . . . Th	232.5	
COBALT . . . Co	59.0	<i>Nickel</i> . . . Ni	58.7		<i>Thulium</i> . . . Tm	171	
<i>Columbium</i> . . . Cb	94	<i>Nitrogen</i> . . . N	14.04		TIN . . . Sn	119.0	
<i>Copper</i> . . . Cu	68.6	<i>Osmium</i> . . . Os	191		<i>Titanium</i> . . . Ti	48.1	
<i>Erbium</i> . . . Er	166	OXYGEN . . . O	16		TUNGSTEN . . . W	184.0	
<i>Fluorine</i> . . . F	19	<i>Palladium</i> . . . Pd	106.5		<i>Uranium</i> . . . U	238.5	
<i>Gadolinium</i> . . . Gd	156	PHOSPHORUS . . . P	31.0		<i>Vanadium</i> . . . V	51.2	
<i>Gallium</i> . . . Ga	70	<i>Platinum</i> . . . Pt	194.8		<i>Xenon</i> . . . Xe	128	
<i>Germanium</i> . . . Ge	72.5	<i>Potassium</i> . . . K	39.15		YTTERBIUM . . . Yb	173.0	
<i>Glucinum</i> . . . Gl	9.1	<i>Praseodymium</i> . . . Pr	140.5		YTTRIUM . . . Yt	89.0	
<i>Gold</i> . . . Au	197.2	<i>Radium</i> . . . Rd	225		<i>Zinc</i> . . . Zn	65.4	
<i>Helium</i> . . . He	4	RHODIUM . . . Rh	103.0		<i>Zirconium</i> . . . Zr	90.6	

TABLE OF COMPARATIVE PLATE SPEED NUMBERS.

H & D.	Watkins P No.	Wynne F No.	H & D.	Watkins P No.	Wynne F No.
10	15	24	220	323	114
20	30	28	240	352	120
40	60	49	260	382	124
80	120	69	280	412	129
100	147	77	300	441	134
120	176	84	320	470	138
140	206	91	340	500	142
160	235	103	380	558	150
200	294	109	400	588	154

The above Watkins and Wynne numbers are equivalent to the H and D, only when the latter is determined in accordance with the directions of Hurter and Driffield, that is with pyro-soda developer and using the straight portion only of the density curve.

To convert H and D into Watkins:—Multiply H and D by 50 and divide by 34. For all practical purposes the Watkins P number is $1\frac{1}{2}$ times H. and D.

To convert Watkins into Wynne F Nos.:—Extract the square root and multiply by 6.4.

The above methods have been approved by the Watkins Meter Company and the Infallible Exposure Meter Company.

TABLES OF DISTANCES AT AND BEYOND WHICH ALL OBJECTS ARE IN FOCUS WHEN SHARP FOCUS IS SECURED ON INFINITY.

Focal length of Lens in inches.	Ratio marked on Stops.													
	<i>f</i> /4	<i>f</i> /5.6	<i>f</i> /6	<i>f</i> /7	<i>f</i> /8	<i>f</i> /10	<i>f</i> /11	<i>f</i> /15	<i>f</i> /16	<i>f</i> /20	<i>f</i> /22	<i>f</i> /32	<i>f</i> /44	<i>f</i> /64
	Number of feet after which all is in focus.													
4	33	24	22	19	17	13	12	9	8	7	6	4	3	2
4¼	38	27	25	21	19	15	14	10	10	7	7	5	3½	2½
4½	42	30	28	24	21	17	15	11	11	8½	7½	5½	4	3
4¾	47	34	31	27	24	19	17	12	12	9½	8½	6	5	3
5	52	36	35	30	26	21	19	14	13	10½	9½	6½	5½	3½
5¼	57	40	38	33	28	23	21	15	14	11½	10½	7	5½	3½
5½	63	45	43	36	31	25	23	17	15	12½	11½	7½	6	4
5¾	68	50	46	38	34	27	25	18	17	13½	13	8½	6½	4
6	75	54	50	42	38	30	28	20	19	15	14	9	7	4½
6¼	81	58	54	46	40	32	29	22	20	16	15	10	7½	5
6½	87	62	58	50	44	35	32	23	22	17½	15	11	8	5½
6¾	94	67	63	54	47	38	34	25	24	19	17	12	8½	6
7	101	72	68	58	51	40	37	27	25	20	18	12½	9	6
7¼	109	78	73	62	54	44	39	29	27	22	20	13½	10	6½
7½	117	83	78	64	58	47	42	31	29	24	21	14½	10½	7
7¾	124	90	83	71	62	50	45	33	31	25	22	15½	11	7½
8	132	96	88	76	68	52	48	36	32	28	24	16	12	8
8¼	141	100	94	80	71	56	51	37	35	29	25	17½	12½	8½
8½	150	104	100	84	76	60	56	40	38	30	27	19	13½	9
8¾	156	111	104	89	78	63	57	42	39	32	29	20	14	10
9	168	120	112	96	84	67	61	45	42	34	31	21	15	10½
9¼	180	127	116	101	90	71	65	47	45	35	32	22	16	11
9½	190	133	125	107	95	75	68	50	47	37	34	24	17	12
9¾	197	141	131	113	99	79	72	52	50	39	36	25	18	12½
10	208	148	140	120	104	83	75	55	52	42	38	26	19	13

If sharp focus is secured on any of the distances shown, then, with the stop indicated, all objects are in focus from half the distance focused on up to infinity.

LENGTH OF STUDIO.

REQUIRED FOR LENSES OF DIFFERENT FOCAL LENGTHS. FROM 6 TO 8 FEET IS ALLOWED FOR THE CAMERA AND OPERATOR.

From "Photographic Lenses" by BECK and ANDREWS.

Focus of Lens	Size	Kind of Portrait	Length of Studio	Dist. of Lens from Object
Inches.			In Feet.	In Feet.
6	Carte de Visite 3¼x4¼	Full Length	18 to 20	11 to 12
7½	Carte de Visite	Full Length	22 to 25	14 to 15
8½	Carte de Visite	Full Length	24 to 28	17 to 19
9½	Cabinet and smaller groups.....	Bust.....	10 to 15	5
11	Cabinet and 5x7 groups	Full Length	20 to 23	12 to 13
14½	Cabinets, panels and 6½x8½ groups....	Bust.....	12 to 17	7
19	10x12 portraits or groups.....	Full Length	25 to 30	17 to 18
24	16x20 portraits or groups.....	Bust.....	13 to 20	8
		Full Length	32 to 40	23 to 24
		Bust.....	14 to 20	7
		Full Length	20 to 25	13
		Bust.....	14 to 20	7
		Full Length	25 to 30	14
		Bust.....	14 to 20	8

TABLE FOR CALCULATING DISTANCES
IN ENLARGING OR REDUCING.

From The British Journal Photographic Almanac.

FOCUS OF LENS.	TIMES OF ENLARGEMENT AND REDUCTION.							
Inches.	1 Inch.	2 Inches.	3 Inches.	4 Inches.	5 Inches.	6 Inches.	7 Inches.	8 Inches.
2.....	4 4	6 3	8 $2\frac{2}{3}$	10 $2\frac{1}{2}$	12 $2\frac{2}{5}$	14 $2\frac{1}{3}$	16 $2\frac{2}{7}$	18 $2\frac{1}{4}$
$2\frac{1}{2}$	5 5	$7\frac{1}{2}$ $3\frac{3}{4}$	10 $3\frac{1}{3}$	$12\frac{1}{2}$ $3\frac{1}{6}$	15 3	$17\frac{1}{2}$ $2\frac{9}{10}$	20 $2\frac{6}{7}$	$22\frac{1}{2}$ $2\frac{3}{16}$
3.....	6 6	9 $4\frac{1}{2}$	12 4	15 $3\frac{3}{4}$	18 $3\frac{3}{5}$	21 $3\frac{1}{2}$	24 $3\frac{3}{7}$	27 $3\frac{3}{8}$
$3\frac{1}{2}$	7 7	$10\frac{1}{2}$ $5\frac{1}{4}$	14 $4\frac{2}{3}$	$17\frac{1}{2}$ $4\frac{3}{4}$	21 $4\frac{1}{5}$	$24\frac{1}{2}$ $4\frac{1}{2}$	28 4	$31\frac{1}{2}$ $3\frac{9}{16}$
4.....	8 8	12 6	16 $5\frac{1}{3}$	20 5	24 $4\frac{4}{5}$	28 $4\frac{2}{3}$	32 $4\frac{4}{7}$	36 $4\frac{1}{2}$
$4\frac{1}{2}$	9 9	$13\frac{1}{2}$ $6\frac{3}{4}$	18 6	$22\frac{1}{2}$ $5\frac{3}{5}$	27 $5\frac{2}{5}$	$31\frac{1}{2}$ $5\frac{1}{4}$	36 $5\frac{1}{7}$	$40\frac{1}{2}$ $5\frac{1}{16}$
5.....	10 10	15 $7\frac{1}{2}$	20 $6\frac{2}{3}$	25 $6\frac{1}{4}$	30 6	35 $5\frac{5}{6}$	40 $5\frac{5}{7}$	45 $5\frac{5}{8}$
$5\frac{1}{2}$	11 11	$16\frac{1}{2}$ $8\frac{1}{4}$	22 $7\frac{1}{3}$	$27\frac{1}{2}$ $6\frac{4}{5}$	33 $6\frac{1}{2}$	$38\frac{1}{2}$ $6\frac{5}{12}$	44 $6\frac{2}{7}$	$49\frac{1}{2}$ $6\frac{1}{16}$
6.....	12 12	18 9	24 8	30 $7\frac{1}{2}$	36 $7\frac{1}{5}$	42 7	48 $6\frac{6}{7}$	54 $6\frac{3}{4}$
7.....	14 14	21 $10\frac{1}{2}$	28 $9\frac{1}{3}$	35 $8\frac{3}{4}$	42 $8\frac{2}{5}$	49 $8\frac{1}{3}$	56 8	63 $7\frac{7}{8}$
8.....	16 16	24 12	32 $10\frac{2}{3}$	40 10	48 $9\frac{3}{5}$	56 $9\frac{1}{3}$	64 $9\frac{1}{7}$	72 9
9.....	18 18	27 $13\frac{1}{2}$	36 12	45 $11\frac{1}{4}$	54 $10\frac{4}{5}$	63 $10\frac{1}{3}$	72 $10\frac{2}{7}$	81 $10\frac{1}{8}$

The object of this table is to enable any manipulator who is about to enlarge (or reduce) a copy any given number of times to do so without troublesome calculation. It is assumed that the photographer knows exactly what the focus of his lens is, and that he is able to measure accurately from its optical center. The use of the table will be seen from the following illustration: A photographer has a *carte* to enlarge to four times its size, and the lens he intends employing is one of 6 inches equivalent focus. He must therefore look for 4 on the upper horizontal line and for 6 in the first vertical column, and carry his eye to where these two join, which will be at $30-7\frac{1}{2}$. The greater of these is the distance the sensitive plate must be from the center of the lens; and the lesser, the distance of the picture to be copied. To *reduce* a picture any given number of times, the same method must be followed; but in this case the greater number will represent the distance between the lens and the picture to be copied, the latter that between the lens and the sensitive plate. This explanation will be sufficient for every case of enlargement or reduction.

If the focus of the lens be 12 inches, as this number is not in the column of focal lengths, look out for 6 in this column and multiply by 2, and so on with any other numbers.

UNITED STATES WEIGHTS AND MEASURES.

ACCORDING TO EXISTING STANDARDS.

LINEAL.

	Inches.	Feet.	Yards.	Rods.	Fur's.	Mile.
12 inches = 1 foot.	12 =	1				
3 feet = 1 yard.	36 =	3 =	1			
5.5 yards = 1 rod.	198 =	16.5 =	5.5 =	1		
40 rods = 1 furlong.	7,920 =	660 =	220 =	40 =	1	
8 furlongs = 1 mile.	63,360 =	5,280 =	1,760 =	320 =	8 =	1

SURFACE—LAND.

	Feet.	Yards.	Rods.	Roods.	Acres.
144 sq. ins. = 1 sq. ft.	9 =	1			
9 sq. ft. = 1 sq. yard.	272.25 =	30.25 =	1		
30.25 sq. yds. = 1 sq. rod.	10,890 =	1,210 =	40 =	1	
40 sq. rods = 1 sq. rood.	43,560 =	4,840 =	160 =	4 =	1
4 sq. roods = 1 acre.	27,878,400 =	3,097,600 =	102,400 =	2,560 =	640

VOLUME—LIQUID.

	Gills.	Pints.	Gallon.	Cub. In.
4 gills = 1 pint.	32 =	8 =	1 =	231
2 pints = 1 quart.				
4 quarts = 1 gallon.				

FLUID.

Gallon.	Pints.	Ounces.	Drachms.	Minims.	Cubic Centimetres.
1 =	8 =	128 =	1,024 =	61,440 =	3,785.435
	1 =	16 =	128 =	7,680 =	473.179
		1 =	8 =	480 =	29.574
			1 =	60 =	3.697

16 ounces, or a pint, is sometimes called a fluid pound.

TROY WEIGHT.

Pound.	Ounces.	Pennyweights.	Grains.	Grams.
1 =	12 =	240 =	5,760 =	373.24
	1 =	20 =	480 =	31.10
		1 =	24 =	1.56

APOTHECARIES' WEIGHT.

lb.	$\frac{3}{4}$	3	℥	gr.	
Pound.	Ounces.	Drachms.	Scruples.	Grains.	Grams.
1 =	12 =	96 =	288 =	5,760 =	373.24
	1 =	8 =	24 =	480 =	31.10
		1 =	3 =	60 =	3.89
			1 =	20 =	1.30
				1 =	.06

The pound, ounce, and grain are the same as in Troy weight.

AVOIRDUPOIS WEIGHT.

Pound.	Ounces.	Drachms.	Grains (Troy).	Grams.
1 =	16 =	256 =	7,000 =	453.60
	1 =	16 =	437.5 =	28.35
		1 =	27.34 =	1.77

ENGLISH WEIGHTS AND MEASURES.

APOTHECARIES' WEIGHT.

20 Grains	= 1 Scruple	= 20 Grains.
3 Scruples	= 1 Drachm	= 60 Grains.
8 Drachms	= 1 Ounce	= 480 Grains.
12 Ounces	= 1 Pound	= 5760 Grains.

FLUID MEASURE.

60 Minims	= 1 Fluid Drachm
8 Drachms	= 1 Fluid Ounce.
20 Ounces	= 1 Pint.
8 Pints	= 1 Gallon.

The above weights are usually adopted in formulas.

All Chemicals are usually sold by

AVOIRDUPOIS WEIGHT.

27 $\frac{11}{32}$ Grains	= 1 Drachm	= 27 $\frac{11}{32}$ Grains.
16 Drachms	= 1 Ounce	= 437 $\frac{1}{2}$ Grains.
16 Ounces	= 1 Pound	= 7000 Grains.

Precious Metals are usually sold by

TROY WEIGHT.

24 Grains	= 1 Pennyweight	= 24 Grains.
20 Pennyweights	= 1 Ounce	= 480 Grains.
12 Ounces	= 1 Pound	= 5760 Grains.

NOTE.—An ounce of metallic silver contains 480 grains, but an ounce of nitrate of silver contains only 437 $\frac{1}{2}$ grains.

UNITED STATES FLUID MEASURE.

Gal.	Pints.	Ounces.	Drachms.	Mins.	Cub. In.	Grains.	Cub. C.M.
1	= 8	= 128	= 1,024	= 61,440	= 231.	= 58,328.886	= 3,785.44
	1	= 16	= 128	= 7,680	= 28.875	= 7,291.1107	= 473.18
		1	= 8	= 480	= 1.8047	= 455.6944	= 29.57
			1	= 60	= 0.2256	= 56.9618	= 3.70

IMPERIAL BRITISH FLUID MEASURE.

Gal.	Pints.	Ounces.	Drachms.	Mins.	Cub. In.	Grains.	Cub. C.M.
1	= 8	= 160	= 1,280	= 76,800	= 277.27384	= 70,000	= 4,543.732
	1	= 20	= 160	= 9,600	= 34.65923	= 8,750	= 567.966
		1	= 8	= 480	= 1.73296	= 437.5	= 28.398
			1	= 60	= 0.21662	= 54.69	= 3.550

“UNIFORM SYSTEM” NUMBERS FOR STOPS **FROM $\frac{f}{1}$ TO $\frac{f}{100}$.**

In the following table Mr. S. A. Warburton calculated the exposure necessary with every stop from $\frac{f}{1}$ to $\frac{f}{100}$ compared with the unit stop of the “uniform system” of the Photographic Society of Great Britain. The figures which are underlined show in the first column what $\frac{f}{u}$ must be in order to increase the exposure in geometrical ratio from $\frac{f}{4}$, the intermediate numbers showing the uniform system number for any other aperture.

f	U. S. No.	f	U. S. No.	f	U. S. No.
<u>1</u>	<u>$\frac{1}{16}$</u>	15	14.06	58	210.25
<u>$1\frac{1}{4}$</u>	<u>.097</u>	16	16	59	217.56
1.414	$\frac{1}{8}$	17	18.06	60	225.00
<u>$1\frac{1}{2}$</u>	<u>.140</u>	18	20.25	61	232.56
<u>$1\frac{3}{4}$</u>	<u>.191</u>	19	22.56	62	240.25
2	$\frac{1}{4}$	20	25.00	63	248.06
<u>$2\frac{1}{4}$</u>	<u>.316</u>	21	27.56	64	256
<u>$2\frac{1}{2}$</u>	<u>.390</u>	22	30.25	65	264.06
2.828	$\frac{1}{2}$	22.62	32	66	272.25
<u>$2\frac{3}{4}$</u>	<u>.472</u>	23	33.06	67	280.56
3	.562	24	36.00	68	289.00
<u>$3\frac{1}{4}$</u>	<u>.660</u>	25	39.06	69	297.56
<u>$3\frac{1}{2}$</u>	<u>.765</u>	26	42.25	70	306.25
<u>$3\frac{3}{4}$</u>	<u>.878</u>	27	45.56	71	315.06
4	1.00	28	49.00	72	324.00
<u>$4\frac{1}{4}$</u>	<u>1.12</u>	29	52.56	73	333.06
<u>$4\frac{1}{2}$</u>	<u>1.26</u>	30	56.25	74	342.25
<u>$4\frac{3}{4}$</u>	<u>1.41</u>	31	60.06	75	351.56
5	1.56	32	64	76	361.00
<u>$5\frac{1}{4}$</u>	<u>1.72</u>	33	68.06	77	370.56
<u>$5\frac{1}{2}$</u>	<u>1.89</u>	34	72.25	78	380.25
5.656	2	35	76.56	79	390.06
<u>$5\frac{3}{4}$</u>	<u>2.06</u>	36	81.00	80	400.00
6	2.25	37	85.56	81	410.06
<u>$6\frac{1}{4}$</u>	<u>2.44</u>	38	90.25	82	420.25
<u>$6\frac{1}{2}$</u>	<u>2.64</u>	39	95.06	83	430.56
<u>$6\frac{3}{4}$</u>	<u>2.84</u>	40	100.00	84	440.00
7	3.06	41	105.06	85	451.56
<u>$7\frac{1}{4}$</u>	<u>3.28</u>	42	110.25	86	462.25
<u>$7\frac{1}{2}$</u>	<u>3.51</u>	43	115.56	87	473.06
<u>$7\frac{3}{4}$</u>	<u>3.75</u>	44	121.00	88	484.00
8	4	45	126.56	89	495.06
<u>$8\frac{1}{4}$</u>	<u>4.25</u>	45.25	128	90	506.25
<u>$8\frac{1}{2}$</u>	<u>4.51</u>	46	132.25	90.50	512
<u>$8\frac{3}{4}$</u>	<u>4.78</u>	47	138.06	91	517.56
9	5.06	48	144.00	92	529.00
<u>$9\frac{1}{4}$</u>	<u>5.34</u>	49	150.06	93	540.56
<u>$9\frac{1}{2}$</u>	<u>5.64</u>	50	156.25	94	552.25
<u>$9\frac{3}{4}$</u>	<u>5.94</u>	51	162.56	95	564.06
10	6.25	52	169.00	96	576.00
11	7.56	53	175.56	97	588.06
11.31	8	54	182.25	98	600.25
12	9.00	55	189.06	99	612.56
13	10.56	56	196.00	100	625.00
14	12.25	57	203.06		

American Photographic Societies

This list is compiled from information received from an inquiry form sent to over one hundred societies during the latter half of 1908. It includes many societies not given in the 1907 list, but falls short of completeness as a record of the photographic societies of America. Secretaries of societies not here listed are urged to send us particulars of their organizations so that the list may be fully representative of society activities—EDITOR.

AKRON CAMERA CLUB—Akron, Ohio. Headquarters, Y. M. C. A. Building. Established 1890. Membership, 30. Date of meetings, second and fourth Tuesday in each month from October to May inclusive. *President*, William Spanton. *Secretary*, Albert Hibbs, 358 Dean Street. Date of annual exhibition, February.

AMERICAN FEDERATION OF PHOTOGRAPHIC SOCIETIES—Chicago, Ill. Headquarters, Northwestern University Building. *President*, F. M. Tuckerman; *Vice-President*, R. E. Weeks; *Treasurer*, George C. Elmberger; *Secretary*, Clarence B. Hale, 215 Jackson Boulevard. *Historian*, Wm. A. Rheinheimer.

AMERICAN INSTITUTE PHOTOGRAPHIC SECTION—New York City. Headquarters, 19—21 West 44th Street. Established March 26, 1859. Stated meetings, first and third Tuesdays of each month. No meetings during summer months. *President*, Oscar G. Mason; *Vice-President*, Robert A. B. Dayton; *Treasurer*, James Y. Watkins; *Secretary*, John W. Bartlett, M.D., F.R.P.S., 149 West 94th Street.

AMERICAN LANTERN SLIDE INTERCHANGE—New York. Principal office, 361 Broadway. Organized 1885. *General Manager*, F. C. Beach. Membership, 20 clubs. *Board of Managers*, F. C. Beach, New York; John P. Zenner, Buffalo, N. Y.; O. C. Reiter, Pittsburg, Pa.; H. R. Terhune, Orange, N. J.; Herbert F. Smith, Syracuse, N. Y. Annual meeting, January of each year.

ASSOCIATES IN PICTORIAL PHOTOGRAPHY—Circulates Portfolios to which each member contributes a print each month and criticizes those of other members. Twenty-two members. *Director*, William H. Zerbe, 345 Spruce Street, Richmond Hill, L. I.

BOSTON CAMERA CLUB—Boston, Mass. Headquarters, 50 Bromfield Street. Established 1881. Incorporated 1886. Membership, 120. Date of meetings, first Mondays. *President*, P. Hubbard; *Secretary*, John H. Thurston, 50 Bromfield Street. Date of annual exhibition, Spring.

BOSTON YOUNG MEN'S CHRISTIAN UNION CAMERA CLUB—Boston, Mass. Headquarters, 48 Boylston Street, Boston. Organized 1908. *President*, Stephen E. Woodbury; *Vice-President*, Richard Ray, Jr. Meetings held first Tuesday in each month. *Secretary*, Wilfred S. White.

BROCKTON CAMERA CLUB—Brockton, Mass. Headquarters, Arcade Building. Established April 1894. Membership, 50. Date of meetings, third Friday each month. *President*, Wm. F. Bond; *Secretary*, George W. Higgins, 34 Commercial Street, Brockton. Date of annual exhibition third week in April.

BROOKLYN CAMERA CLUB—Brooklyn, N. Y. Established, February 2, 1900. Incorporated February 19, 1900. Headquarters, 776 Manhattan Avenue. Membership, 41. Date of meetings, first Wednesday each month. *President*, Wm. T. Knox; *Secretary*, U. Grant Dodson, 21 Clifford Place, Brooklyn.

BUFFALO CAMERA CLUB—Buffalo, N. Y. Headquarters, Central Y. M. C. A. Building. *President*, George J. Mason; *Vice-President*, Charles R. Phipps; *Secretary*, Robert C. Caupp.

CALIFORNIA CAMERA CLUB—San Francisco, Cal. Headquarters, 2206 Steiner Street, San Francisco. Established March 18, 1890. Incorporated April 5, 1890. Membership, 441. Date of meeting, second Tuesday monthly. Monthly slide exhibitions every third Friday in the month. Print exhibitions, monthly. Date of annual exhibition, no set time. *President*, Albert Le Breton; *Secretary*, Edward G. Eisen, 2206 Steiner Street, San Francisco.

CAMERA CLUB—New York. Headquarters, 121 West 68th Street. Established by consolidation of Society of Amateur Photographers and New York Camera Club in April, 1896. Incorporated May 7, 1896. Membership, 225. Date of annual meeting, second Tuesday in April. *Secretary*, Harry Coutant.

CAMERA CLUB OF MT. VERNON—(No particulars.)

CAMERA CLUB OF THE TWENTY-THIRD STREET BRANCH, Y. M. C. A.—New York. Headquarters, 23rd Street Y. M. C. A. Established June 3, 1904. Membership, 90. Date of business meetings, first Monday in each month; third Monday in each month, socials, lantern slide lectures, etc. *President*, Jack Braden; *Treasurer*, J. O. Sprague; *Secretary*, Frank M. Ingalls, Room 914, 215 West 23rd Street. Date of annual exhibition, usually in January. No fixed date.

"CAMERADS"—New Brunswick, N. J. Headquarters, corner Church and Neilson Streets. Established, April 24, 1890. *Secretary*, Harvey Iredell, D.D.S., Lock Box 34, New Brunswick.

CAMERA WORKERS—New York. Headquarters, 122 East 25th Street. Organized 1908. This club has no officers, but is managed by an executive committee of its members. The membership is divided into three classes, and limited to 100. *Secretary*, Paul Haviland

CAPITAL CAMERA CLUB—Washington, D. C. Headquarters, 1010 F Street, N. W. Established April, 1891. Membership, 80, limited to 100. Date of meetings, first Saturday in each month. *President*, Ralph W. Magee; *Vice-President*, Wm. S. Adams; *Treasurer*, Wm. T. Wade; *Secretary*, Frank W. Vedder, 64 Bryant Street, N. W.; *Librarian*, T. Quinn Jones. Date of annual exhibition, May.

CHICAGO CAMERA CLUB—Chicago, Ill. Headquarters, Northwestern University Building, Dearborn and Lake Streets. Established February 14, 1904. Incorporated February 19, 1904. Date of meetings, every Thursday. *President*, F. M. Tuckerman; *Secretary and Treasurer*, George C. Elmberger, 20 Gross Street, Jefferson Park, Chicago. Annual exhibition, March (Salon).

COLUMBIA PHOTOGRAPHIC SOCIETY—Philadelphia, Pa. Headquarters, 1811 North Broad Street, Philadelphia. Established 1889. Incorporated July 3, 1894. Membership, 150. Date of meetings, first Monday of each month, business meeting; other Mondays, lectures or demonstrations. *President*, Frank D. Long; *Secretary*, Allan M. Tergeson, 2224 Venangast, Philadelphia. Date of annual exhibition, January, prints; November, lantern slide.

DAGUERRE CAMERA CLUB—Headquarters, Harbert, Mich. Established 1893. Membership, 20. Date of meetings, first Monday of each month. *President*, F. Blish; *Secretary*, Wells Sizer, Harbert.

ELMIRA CAMERA CLUB—Elmira, N. Y. Headquarters, 112 Baldwin Street, Elmira. Established 1902. Membership, 30. *President* H. T. Stagg; *Secretary-Treasurer*, W. J. Wetmore.

ESSEX CAMERA CLUB—Newark, N. J. Headquarters, 33 Court Street, Newark, N. J. Established April, 1901. Membership, 75. Date of meetings, fourth Tuesday of every month. *President*, Floyd V. Harper; *Secretary*, L. F. Gebhardt, 235 So. 11th Street. Date of annual exhibition, February.

GRAND RAPIDS CAMERA CLUB—Grand Rapids, Mich. (No particulars.)

HAMILTON SCIENTIFIC ASSOCIATION, CAMERA SECTION—Hamilton, Can. Headquarters, 104 King Street, W. Established April, 1891. Membership, 80. Date of meetings, second and fourth Tuesdays. *President*, Charles A. Herald; *Secretary*, Arthur Smith, care of Club Rooms, 104 King Street, W. Date of annual exhibition, last week of October.

HARTFORD CAMERA CLUB—Hartford, Conn. Membership, 100.

HAVERHILL CAMERA CLUB—Haverhill, Mass. Headquarters, Daggett Building, Merrimack Street. Established 1898. Membership, 37 active; 1 honorary. Date of meetings, third Tuesday, monthly. *President*, Harry J. Rivers; *Secretary*, L. O. Philbrick, 108 Washington Street. Date of annual exhibition, no set date.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION—San Francisco, Cal. Founded, 1908. F. B. Hinman, *President*, Room 4, Union Depot, Denver, Colorado; J. H. Winchell, *Chief Album Director*, R. F. D. No. 2, Painesville, Ohio; Fayette J. Clute, *General Secretary*, 713-715 Call Building, San Francisco; Dr. C. H. Gardner, *Stereoscopic Album Director*, U. S. Marine Hospital, San Francisco; the *State Secretaries*, Alabama, Richard Hines, Jr., 155 State Street, Mobile; Colorado, F. B. Hinman, Room 4, Union Depot, Denver; Missouri, Wharton Schooler, R. F. D. No. 2, Eolia; Montana, Mrs. Ludovica Butler, 932 W. Broadway, Butte; Nebraska, Miss Lou P. Tillotson, 1305 South Thirty-second Street, Omaha; New Hampshire, Mrs. A. Leonora Kellogg, 338 McGregor Street, Manchester; North Dakota, Jas. A. Van Kleeck, 619 Second Avenue, North Fargo; Ohio, J. H. Winchell, R. F. D. No. 2, Painesville; South Dakota, C. B. Bolles, L. B. 351, Aberdeen.

- INTERNATIONAL PHOTO PRINT EXCHANGE—Beach Bluff, Mass. Established in 1893. Membership, 20 (limited to that number), each member in a different country. *Secretary-Treasurer*, Walter Sprange, Beach Bluff, Mass.
- JAMESTOWN CAMERA CLUB—Jamestown, N. Y. Established 1907. Headquarters, Gifford Building, Jamestown, N. Y. Membership, 30. Meetings, second Tuesday of month. *President*, Miles C. Nichols; *Vice-President*, John M. Cushman; *Treasurer*, O. D. Starr; *Secretary*, John J. Andrews.
- LOS ANGELES CAMERA CLUB—Los Angeles, Cal. Headquarters, Mammoth Hall. Organized 1908. *President*, T. M. Jenkins; *Secretary*, C. E. Smith, 2036, Echo Park Avenue.
- METROPOLITAN CAMERA CLUB—100-2, West 101st Street, New York City. (No particulars.)
- MISSOURI CAMERA CLUB—St. Louis, Mo. Club Rooms, 3546 Washington Avenue, St. Louis, Mo. (No particulars.)
- MONTCLAIR CAMERA CLUB—Montclair, N. J. Headquarters, 460 Bloomfield Avenue. Established November 10, 1898. Incorporated August 5, 1899. Membership, 65. Date of meetings, second Saturday of each month. Annual meeting, second Saturday in February. *President*, C. C. Stanley; *Secretary*, C. Russell Jacobus, 550 Bloomfield Avenue. Date of annual exhibition next fall (date not fixed).
- MONTREAL AMATEUR ATHLETIC ASSOCIATION CAMERA CLUB—Montreal, Canada. Headquarters, M. A. A. Building, 250 Peel Street. Organized, May 1, 1906. Membership, 45. Meetings monthly. *President*, C. F. G. Johnson; *Hon. Secretary-Treasurer*, W. S. Weir.
- NEW BRITAIN CAMERA CLUB—Organized 1892. *President*, G. C. Atwell; *Secretary*, E. A. Sheldon, 53 Lenox Place, New Britain, Conn. Meets second and fourth Tuesdays, 173 Main Street.
- NEW ENGLAND PHOTOGRAPHIC EXCHANGE—E. A. Sheldon, *Exchange Secretary*, 53 Lenox Place, New Britain, Conn.
- ORANGE CAMERA CLUB—Orange, N. J. Headquarters, 222 Main Street. Established March 21, 1892. Incorporated May 19, 1893. Membership, 110. Date of meetings, 5th and 20th of each month, except July and August. *President*, Ernest L. Gould; *Secretary*, W. A. Rudstad, 222 Main Street, Orange. Date of annual exhibitions, Fall and Spring.
- OREGON CAMERA CLUB—Portland, Ore. Established 1895. Incorporated 1903. Headquarters, 207 Park Street. Membership, 140. Date of meetings, second Tuesday in January. *President*, James J. Tyrrell; *Secretary*, John V. Reid, Oregon Camera Club. Date of annual exhibition, early Spring.
- PEN, PENCIL, AND CAMERA CLUB OF PITTSBURG.—Wilkesburg, Pa. Headquarters, Wood Street and North Avenue. Limited membership of twenty. Waiting list filled. *President*, F. E. Johnson; *Secretary-Treasurer*, R. L. Sleeth, Jr.
- PHOTOGRAPHIC CLUB OF BALTIMORE—Baltimore, Md. Headquarters, Club House, 870 Linden Avenue. Established 1885. Incorporated 1890. Membership, active, 49; associate, 18; honorary, 10; non-resident, 3; total, 80. Date of meetings, every Tuesday, 8.15 P. M. *President*, Percy M. Reese; *Secretary*, Robert L. Harris, 2109 Fairmount Avenue. Date of annual exhibition, October.
- PHOTOGRAPHIC POSTCARD EXCHANGE—*Director*, C. Frederick Potter Jr., 620½ Nicollet Avenue, Minneapolis, Minn.
- PHOTOGRAPHIC SOCIETY OF PHILADELPHIA—Philadelphia, Pa. Headquarters, 1722 Arch Street. Established November, 1862. Incorporated April 24, 1885. Membership, 160. Date of meetings, second, third, and fourth Wednesday, 8 P. M. *President*, C. Yarnall Abbott; *Secretary*, M. Richard Witt, Room 1316, 1201 Chestnut Street. Date of annual exhibition, February.
- PHOTO-PICTORIALISTS OF BUFFALO—Buffalo, N. Y. Organized October, 1906. Membership, 9. Meetings, second and fourth Thursdays of each month. Members of Camera Club Print-interchange. *Correspondent*, W. H. Porterfield, 100 Lakeview Avenue.
- PHOTO-SECESSION—New York, N. Y. Headquarters and Galleries, 291 Fifth Avenue. Continuous exhibitions November—April. *Director*, Alfred Stieglitz.

- PITTSBURG ACADEMY OF SCIENCE AND ART, (PHOTOGRAPHIC SECTION)**—Pittsburg, Pa. Headquarters, Carnegie Institute, Schenley Park. Organized January 23, 1900. Membership, 100. Meetings, second Tuesday of each month at Club Rooms, 6017 Penn Avenue and fourth Tuesday of each month at Carnegie Institute, except July and August. *President*, O. C. Reiter; *Vice-President*, George B. Parker; *Lantern Slide Director*, Wm. McK. Ewart; *Print Director*, H. F. Walbridge; *Secretary-Treasurer*, J. M. Conner, Shetland and Finley Avenues, Pittsburg.
- PORTLAND CAMERA CLUB**—Portland, Me. Headquarters, 571½ Congress Street. Established 1899. Membership, 90. Date of meetings, every Friday evening. *President*, S. S. Skolfield; *Secretary*, O. P. T. Wish, 743 Congress Street. Date of annual exhibition, in February.
- POSTAL PHOTOGRAPHIC CLUB**—Headquarters, Washington, D. C. Established December, 1888. Membership, 40. Date of meetings, no regular meeting. *President*, Charles E. Fairman; *Secretary*, Gustavus A. Brandt, 631 Maryland Avenue, S. W., Washington, D. C. Albums circulate among members monthly, except August and September.
- PROVIDENCE CAMERA CLUB**—Providence, R. I. Established 1883. Incorporated 1889. Headquarters, 123 Eddy Street. Total membership, 79. Date of meetings, second Saturday of each month. *President* O. C. Barrows; *Secretary*, W. J. Fuller, 123 Eddy Street.
- ROCHESTER CAMERA CLUB**—Rochester, N. Y. Headquarters, Wilder Arcade, Rochester, N. Y. *President*, Irwin Taylor; *Vice-President*, Chas. P. Zoller; *Treasurer*, R. A. Jerolemon; *Secretary*, D. C. Ward, Rochester, N. Y. *Corresponding Secretary*, Miss M. B. Penfield.
- ST. LAWRENCE CAMERA CLUB**—Ogdensburg, N. Y. Headquarters, 26 Jay Street. Established 1900. Membership, 12. Date of meetings, at the call of the Secretary. *President*, Arthur L. Jameson; *Secretary*, John N. Brown, 26 Jay Street.
- ST. LOUIS CAMERA CLUB**—(No particulars.)
- SALON CLUB**—Fifty members. *Director*, W. H. Zerbe, 345 Spruce Street, Richmond Hill, L. I., N. Y.; *Secretaries*, W. and G. Parrish, 5607 Cobanne Avenue, St. Louis. Circulate monthly portfolios.
- SAVANNAH CAMERA CLUB**—Savannah, Ga. Headquarters, Park Avenue and Bull Street. Established, June, 1897. Membership, 46. Date of meetings, Wednesday of each week. *President*, J. S. Hexter; *Secretary*, L. M. Williams, National Bank Building. Date of annual exhibition, Thanksgiving.
- STRATFORD CAMERA CLUB**—Stratford, Conn. Headquarters, Stratford. Organized 1908. *President*, John Graham, Sr.; *Vice-President*, George Stein; *Treasurer*, George Appleyard; *Secretary*, John Graham, Jr.
- SYRACUSE CAMERA CLUB**—Syracuse, N. Y. Headquarters, Y. M. C. A. Building. Established 1886. Incorporated January 19, 1892. Membership, 101. Date of meetings, Friday evening of each week. *President*, J. E. Bierhardt; *Secretary*, M. L. Trowbridge, 216 Ulster Street.
- TOLEDO CAMERA CLUB**—Toledo, Ohio. Member of the American Federation. Headquarters, Museum of Art. Meets second Wednesday of month. *President*, John F. Jones; *Vice-President*, H. Heimerdinger; *Secretary*, C. C. Taylor, 3236 Cambridge Avenue. *Treasurer*, M. W. Chapin.
- TORONTO CAMERA CLUB**—Toronto, Canada. Established 1887. Incorporated 1893. Headquarters, 2 Gould Street. Membership, 180. Date of meetings, every Monday, from October to April inclusive. *President*, R. C. Harris; *Secretary-Treasurer*, Hugh Neilson, 295 Carlton Street. Date of annual exhibition, March or April.
- TOWN AND COUNTRY CAMERA CLUB**—Headquarters, Minneapolis, Minn. Established 1901. Date of meetings, every week, at which lectures and demonstrations are given pertaining to camera work. Outing excursions on May 30. *President*, George L. Nevins; *Secretary*, M. W. Wright, 726 Pelham Street, St. Anthony Park, Minn. Exhibitions annually.
- TROY CAMERA CLUB**—Troy, N. Y. Headquarters, Room 250 River Street. Established February 22, 1904. Membership, 125. Date of meetings, first Monday each month. *President*, Herman Krause; *Secretary*, Albert A. MacNaughton, Box 58, Troy.
- VIRGINIA LEAGUE OF AMATEUR PHOTOGRAPHERS**—Richmond, Va. *Secretary*, J. H. Wildt, 1012 W. Franklin Street, Richmond, Va.
- WISCONSIN CAMERA CLUB**—Milwaukee, Wisconsin. Headquarters, 623 Grand Avenue. Organized 1906. Meets every Tuesday. *President*, A. Doerflinger, 452 East Water Street, Milwaukee.
- WYOMING VALLEY CAMERA CLUB**—Wilkesbarre, Pa. Headquarters, Y. M. C. A. Building. *President*, E. F. Ryman; *Secretary*, Dr. R. L. Wadhams. Exhibition annually in May.



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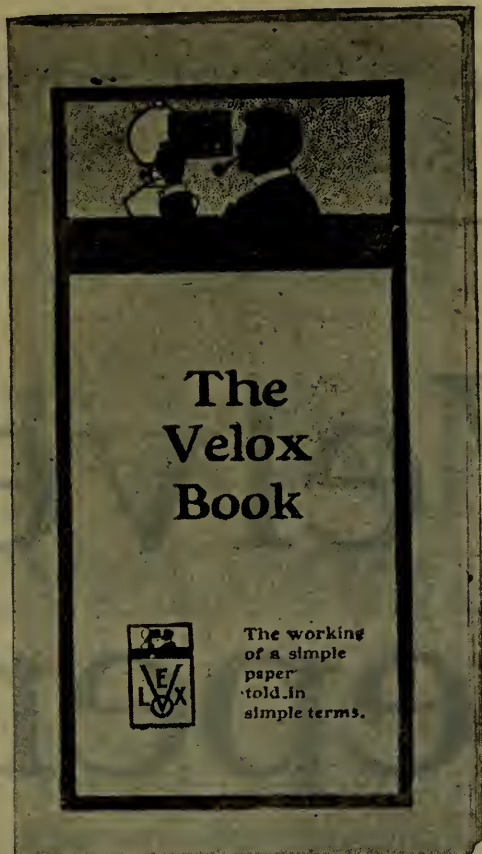
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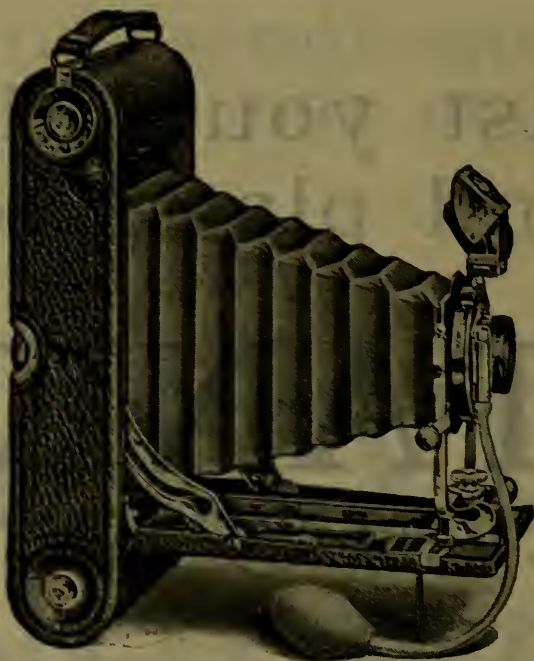
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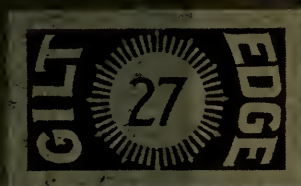
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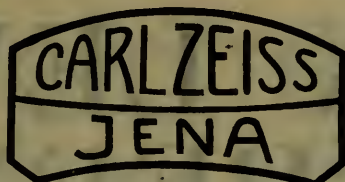
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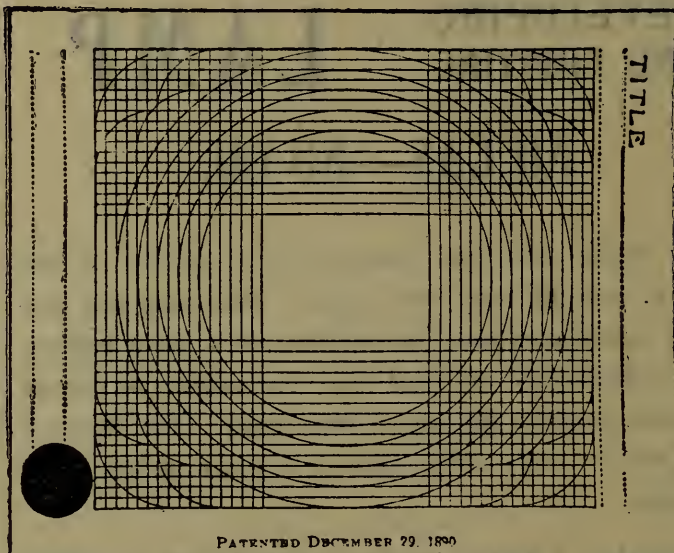
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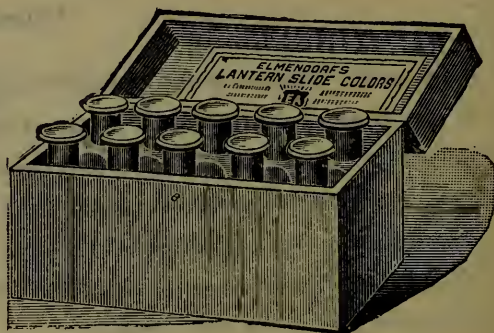
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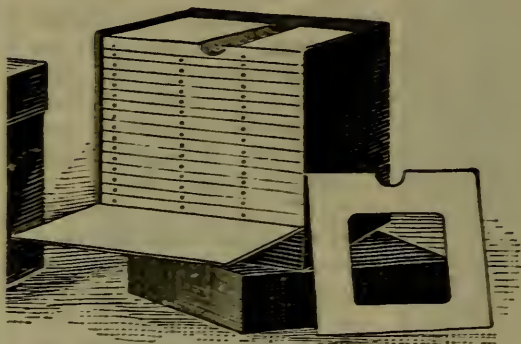
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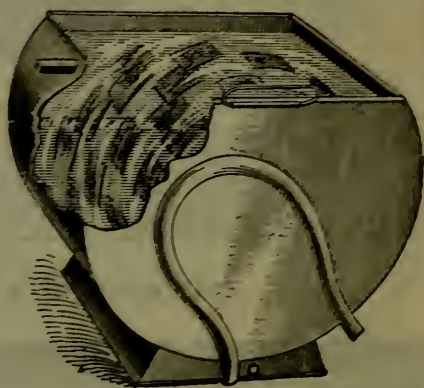
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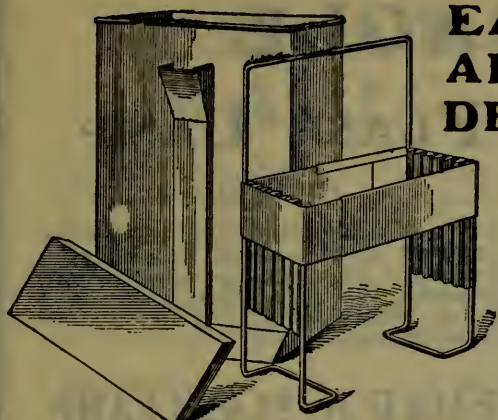


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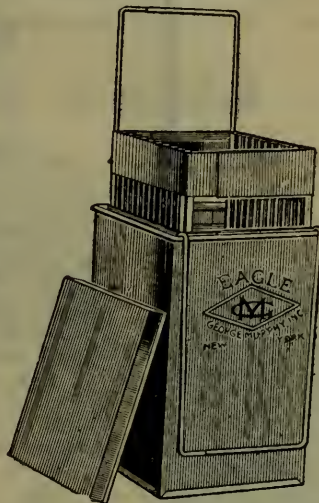
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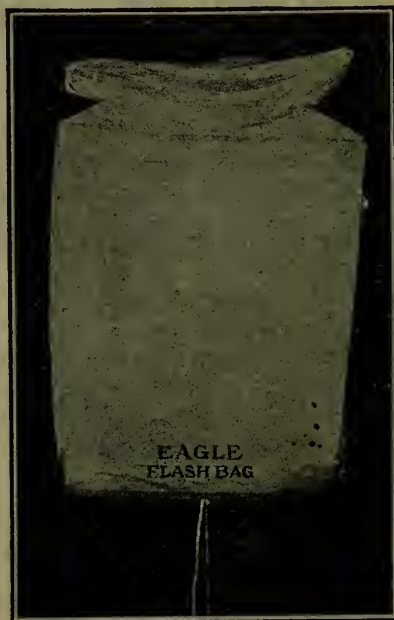
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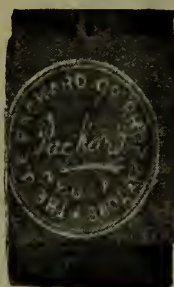
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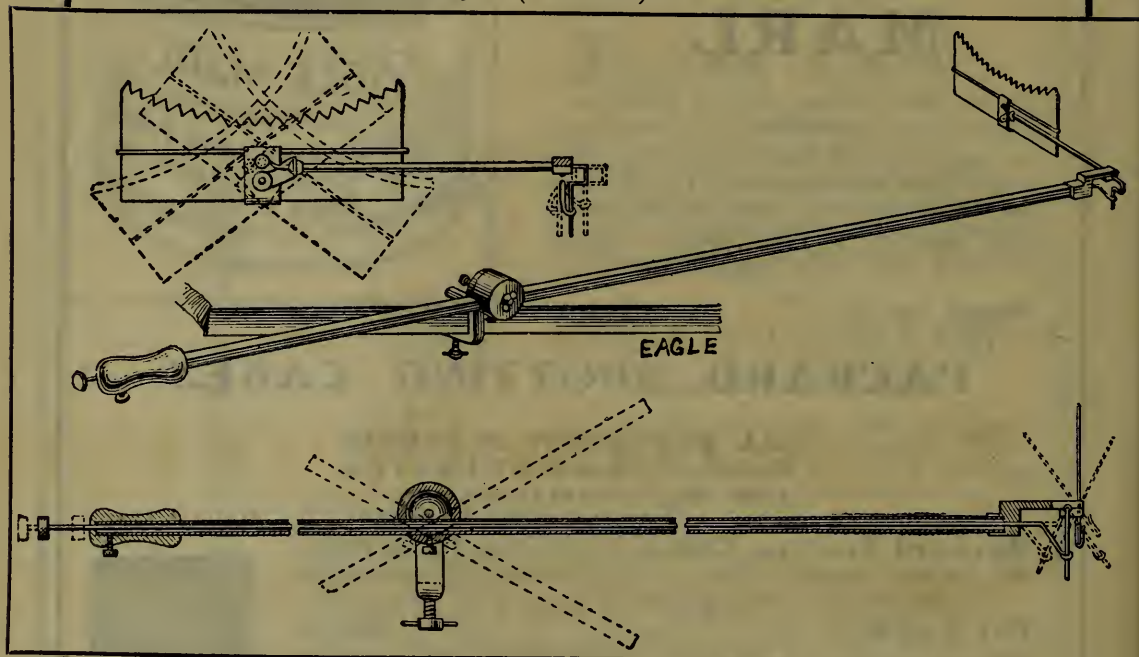
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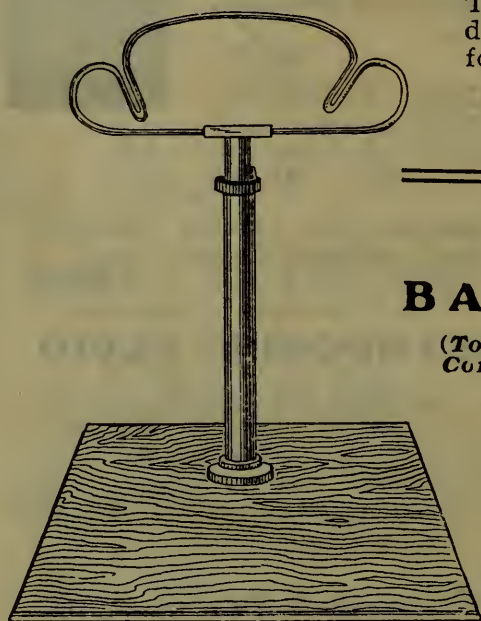


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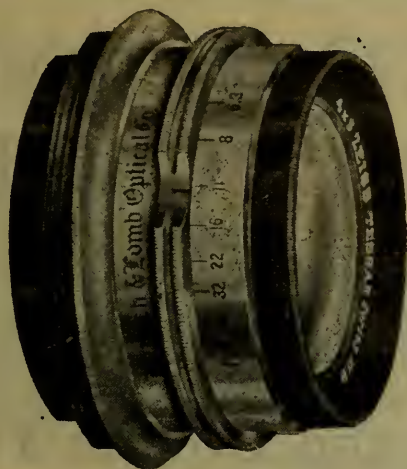
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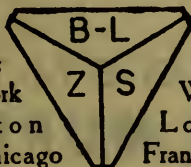
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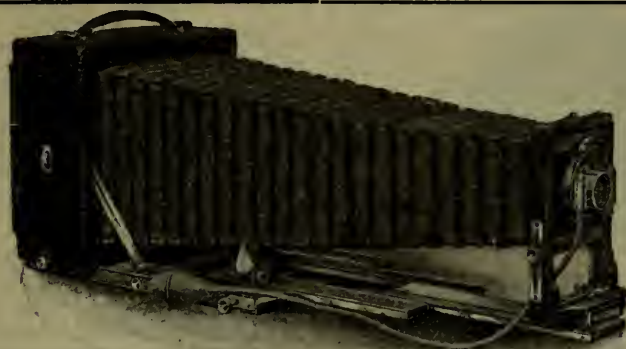
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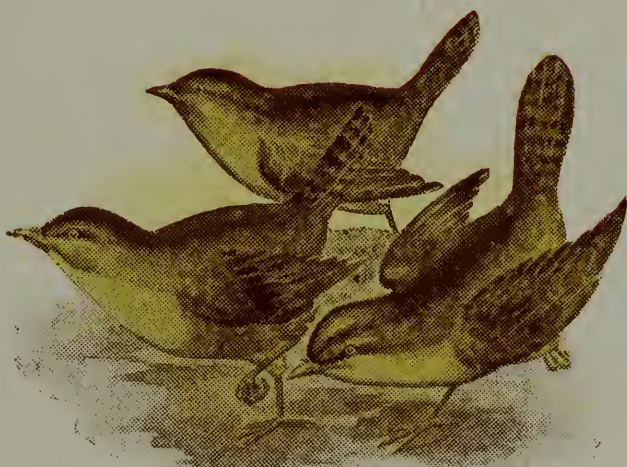
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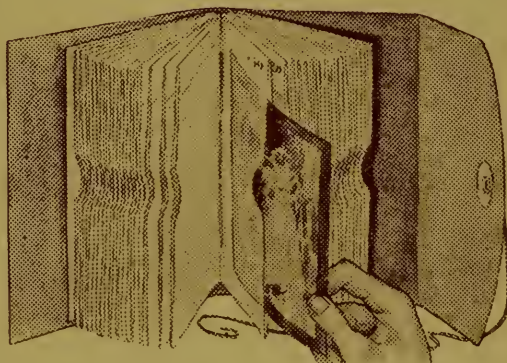
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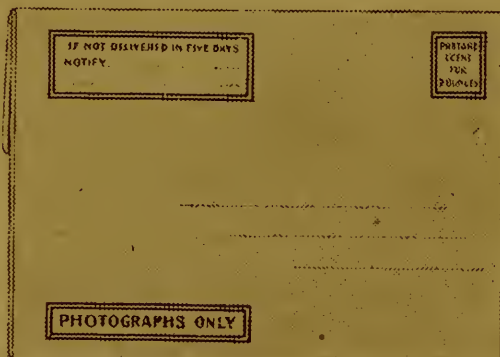
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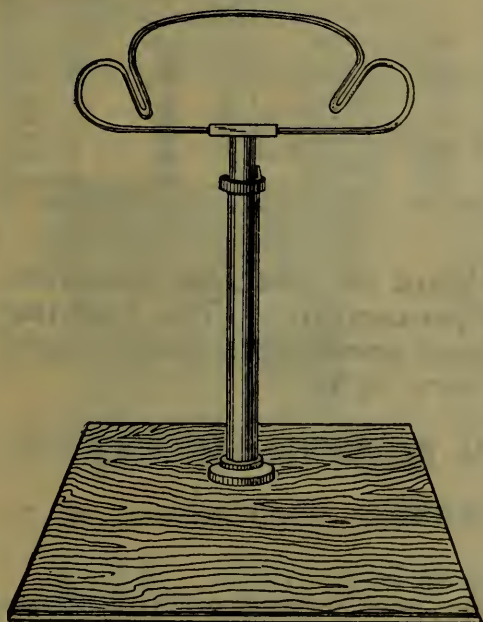
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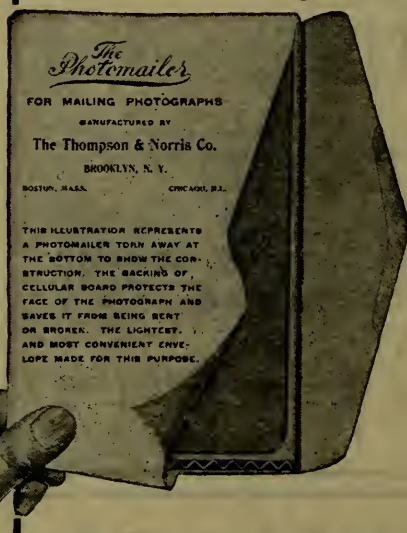
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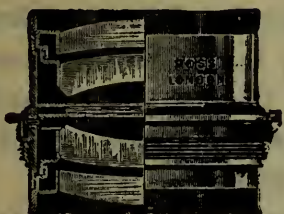
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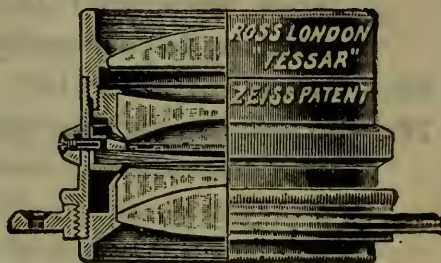
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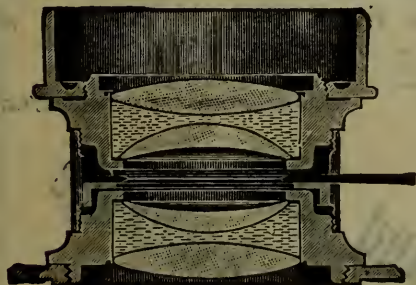
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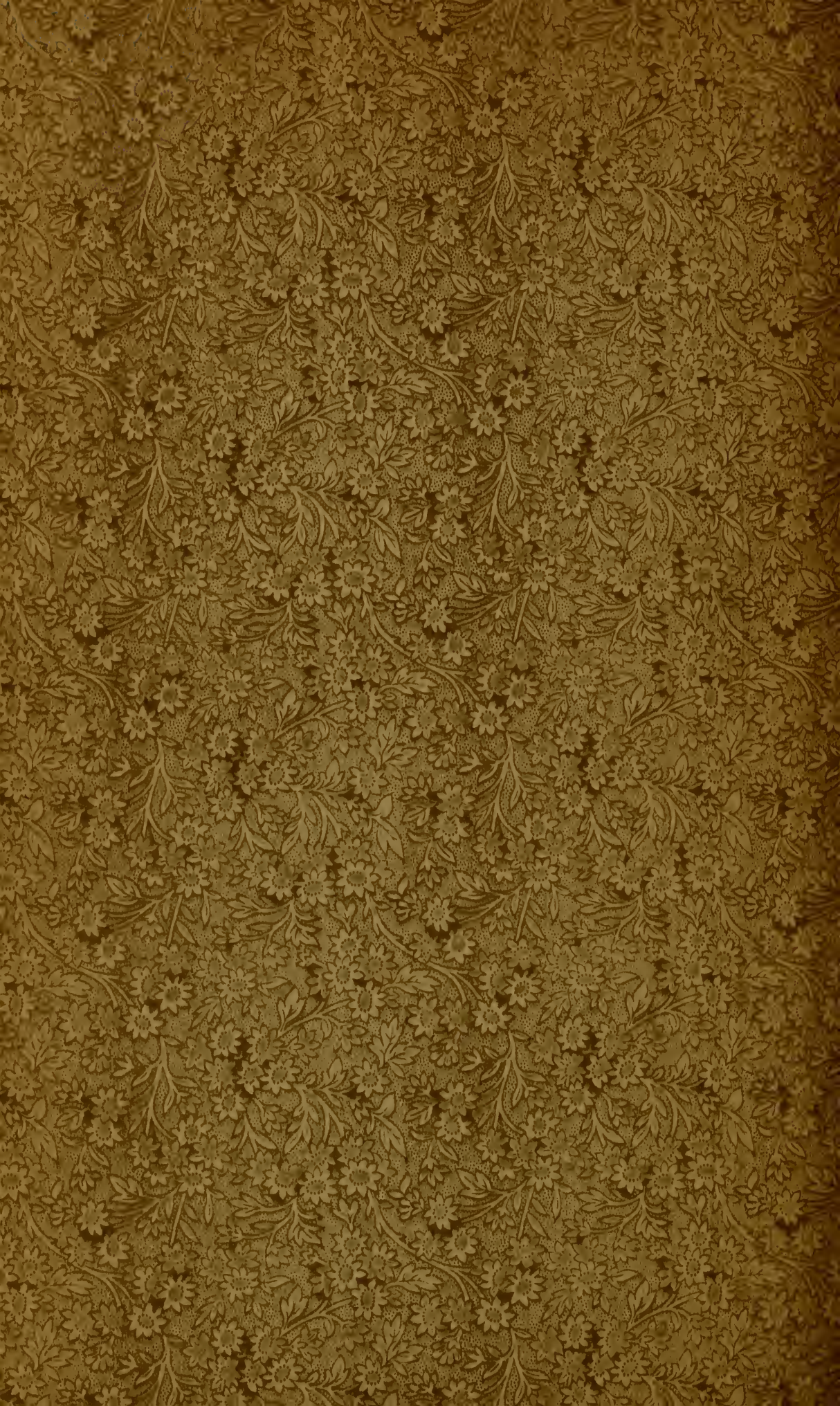
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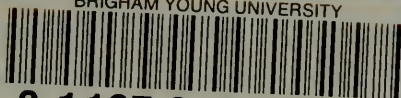
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